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ADIPOSE TISSUE, A NEGLECTED SUBJECT

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Although adipose tissue constitutes a large part of the total bulk of many of us (18 per cent by weight of a person of average nutrition, Voit) and is subject to many physiologic variations and pathologic alterations, nevertheless it has been the subject of relatively little study. In the leading text and reference books of pathology there is scarcely a mention of the adipose tissue as being possibly an actively functioning organ and a system subject to its own diseases. Because of this lack of consideration, adipose tissue presents many unsolved problems as well as many interesting phenomena, some of which will be reviewed in this presentation.

Nearly thirty years ago the Chicago Pathological Society was privileged to have as a guest speaker that great pathologist and teacher of pathologists Prof. Hans Chiari,[1] of Prague, who spoke to us on "Die Selbstständigkeit des Fettgewebes vom pathologisch-anatomischen Standpunkte." This cast a new light on the subject for me, and the interest aroused by his lecture has kept me thinking about the topic and appreciative of the unexplored possibilities.

The most fundamental problem, the origin and nature of adipose tissue, is still not entirely agreed on. From time to time for many years anatomists, embryologists and pathologists have been discovering and rediscovering the fact that fatty adipose tissue is not merely a common connective tissue loaded with stored simple fats but, to a large extent, structurally, developmentally and functionally an independent special tissue more after the order of the true ductless glands. Nevertheless, this view of the nature of fat tissue does not seem to become widespread, as witness the rediscoveries and the enthusiasm with which they are attended. Possibly the persistence of the older idea lies in the historical fact that this was the teaching of Virchow in his "Cellular Pathology," and hence entered into the basic principles of modern medicine. This teaching was unchallenged from 1853 until 1870, when Toldt first stated that the fatty tissue of mammals is a specific organ, entirely distinct from the connective tissues.

The early view, first thoroughly presented by Flemming in 1870, was that adipose tissue is merely ordinary connective tissue in which fat has been deposited.[2] This seems to be the view still generally held by those who have given no particular consideration to the subject, and it involves the assumption that any and all connective tissue can and does serve as a repository for fat when this accumulates in excess. A little reflection shows the impossibility of this conception, for it is found that fat does not become generally and diffusely deposited in the connective tissues throughout the body, even in obesity. Imagine the tragedies if the eyelids of the obese laid on the same amount of subcutaneous fat as the abdominal wall, or if the cerebral membranes became as thick as the omentum. The hands, the feet, the ears and the nose are seen to undergo much less thickening in obesity than the abdominal wall, thighs, buttocks and shoulders. An interesting demonstration of this individuality of fat tissues is furnished by Strandberg.[3] A girl aged 12 years lost the skin from the dorsum of one hand through a burn. It was replaced by a graft from the abdominal wall, in making which the surgeon apparently used both skin and subcutaneous tissue. The result was satisfactory for a time, but as the girl matured and acquired the rotundity of a matron the transplanted skin failed to realize its altered status and laid on the same amount of fat as the original abdominal wall. The result was a grotesque, boxing glove effect, as shown in Strandberg's illustration.

This case also serves to demonstrate that the amount of fat deposited is not dependent on either the original innervation or the blood supply but is a specific property of certain tissues not present, at least to the same degree, in other tissues. There is reason, therefore, to believe that adipose tissue is a specialized tissue and not merely ordinary connective tissue in which fat is deposited when in excess.

Histologic and embryologic evidence has also been presented in support of this idea that fat tissue is a specific tissue, in fact a definite organ. Toldt especially advanced this view in 1870-1888, maintaining that adipose tissue is derived from special primitive fat organs, characterized by the formation of highly vascular lobular structures in which a special type of cell exists, with the function of storing and giving up fat in accordance with the supply and demand. The existence of such specialized tissue for the deposition of fat is especially well seen in certain organs and in certain species, especially the hibernating animals. Here in definite parts of the body there develop in embryonic life well defined masses of tissue, characterized by a lobular arrangement with rich blood supply in close relation to masses of cells which are rich in cytoplasm and are of polyhedral form. When such cells take on fat it is first deposited in fine granules, much as in fatty degeneration or as in the lipoid-rich cells of the adrenal

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1. Chiari, Hans: Tr. Chicago Path. Soc. 8:65, 1910.

2. A good analysis of the early literature is given by H. Batty Shaw (J. Anat. & Physiol. 36:1, 1902).

3. Strandberg, J.: Hygiea 77:372, 1915.

cortex. As the granules become larger the cell takes on a moruloid or "mulberry" appearance. Only with the most extreme deposition of fat do all the droplets fuse into one or a few large fat spaces, and often the nucleus retains its central location and does not take the flattened form at the cell periphery characteristic of the ordinary adipose tissue. In different species the cells exhibit varying degrees of structural change during deposition of fat. Thus in rats, in mice and in hibernating fat glands the adipose cells commonly exhibit the mulberry appearance throughout life, no matter how fat the animal becomes. In adult man this appearance is completely lost in even the perirenal fat when the individual is moderately well nourished.

The existence of such specialized fat organs is well established, and the main question is whether all fat tissue represents similar specialized elements in less well defined lobules or organs or whether ordinary connective tissue may not undergo a transformation into adipose tissue at times or even serve as a reservoir for fat without any transformation or specialization.

Fig. 1.—Subcutaneous adipose tissue (× 225) in extreme emaciation, showing its lobulated glandlike character and the difference from the connective tissue elements between the fat lobules. From a 5½ months infant emaciated because of inability to assimilate fat, owing to congenital occlusion of pancreatic duct. Xerophthalmia was present. (From the Children's Memorial Hospital.)

Early students of the embryologic development of adipose tissue, as Kölliker or Bell,[4] held that the earliest adipose tissue is derived from primitive connective tissue elements. They said that some cells exhibit the capacity to lay on fat while still appearing as ordinary branching connective tissue cells, while others form the so-called primitive fat organs by a transformation of the connective tissue cells into rounded or polygonal cells with abundant cytoplasm, which cells are collected in lobular groupings before beginning to take on fat. Hammar[5] especially developed this conception of two types of fat tissue coming from the same primitive connective tissue elements. He found that some of the fat tissue is formed in well defined structures, essentially fat organs, but that some of it is formed from similar cells which have not been set aside in special fat organs. In man, the perirenal fat deposits offer the closest resemblance to primitive fat organs or to the fat glands of hibernating animals. Hammar held that human subcutaneous fat was formed without preformed lobules. In some animals, such as the rat, some of the fat tissue retains the primitive glandular structure throughout life, and as it tends to become pigmented this has been known as brown adipose tissue. Hammar also thought that transition forms between the two classes of adipose tissue might exist.

Despite Hammar's statement that human subcutaneous fat is formed without preformed lobules, at times it exhibits macroscopically a lobular structure. This I have noted especially in endocrine adiposity, as after castration, and in hypophysial dystrophies. Furthermore, lobulated lipomas arise in the subcutaneous tissue, and hernias of lobules of fat are often seen. In emaciated infants also the subcutaneous adipose tissue may appear in the form of pinkish lobules, composed of large cells, rich in cytoplasm and resembling closely a glandular structure with no resemblance to ordinary adipose tissue but corresponding to the preadipose tissue described by the embryologists, or the brown adipose tissue and hibernating glands in the exhausted stage (fig. 1). Indeed, I have had specimens of such tissue sent me for diagnosis by puzzled microscopists.

Such glandlike masses of preadipose tissue in young infants have a reddish appearance when dissected out and look quite different from ordinary fat tissue with "signet ring" structure. They commonly revert after birth to the "mulberry" type of cell with fine fat globules and much cytoplasm, later again assuming the adult type.

Some authors, like Hammar, Chiari and Inglis,[6] take the compromise position that there are two sorts of adipose tissue, both derived fundamentally from the primitive connective tissue. In one the differentiation becomes so well established that the true, permanent fat tissue is formed, with cells originally rich in cytoplasm collected in definite lobules and in glandlike relation to blood vessels. This is a specialized tissue, located in definite regions and not reverting to ordinary fibrillar connective tissue when the fat is depleted, the fat-poor cells then exhibiting their original cytoplasm-rich or "mulberry" characteristics.

The other sort of adipose tissue, according to this view, merely represents ordinary connective tissue which has, without embryonic differentiation, taken on large amounts of intracellular fat as an adventitious property because of either local or general conditions, often only temporarily. On loss of the fat such tissue reverts to its ordinary character of fibrillar connective tissue. Chiari considers the fat of the bone marrow to be of this character. Such a compromise view is convenient, but it fails to agree with the fact that in some parts of the body the connective tissues are never seen to take on the character of adipose tissue, no matter how great the degree of general adiposity may be.

That the adipose tissue is at least in part originally derived from primitive connective tissue elements is supported not only by embryologic studies, especially those of Bell, but also by its behavior in tumors derived from adipose tissue. Here, as Jacobson[7] particularly

4. Bell, E. T.: Am. J. Anat. 9: 412, 1909 (review of literature).
5. Hammar: Arch. f. mkr. Anat. 45: 512, 1895.
6. Inglis, K.: J. Anat. 61: 452 (July) 1927.
7. Jacobson, V. C.: J. Cancer Research 6: 109 (April) 1921.

points out, mucin forms in abundance, so that malignant tumors from such a source are often described as lipomyxosarcomas, or some such name. The cells that contain the fat in such tumors have been shown by Jacobson to contain mucin as well. But still it would seem that in some parts of the body fibroblasts which do not differentiate into adipose tissue early in development do not later exhibit any ability to accumulate fat or to develop into adipose tissue. Certainly the formation of adipose tissue is not a universal property of fibroblasts, since there exist areas of fibrous tissue that never exhibit the formation of adipose tissue. Mallory goes so far as to say that the fat cell is a perfectly definite type of cell formed by differentiation from a mesenchymal cell, that it is not a fibroblast, that it does not arise from one and that in emaciation it does not revert into one. He says that in emaciated infants, especially soon after birth, the fat cells often increase considerably in size, although containing no fat, and may so resemble large epithelial cells as to be mistaken for some form of tumor. This statement corresponds exactly with my own observation and experience. Even in advanced life the typical perirenal fat cells may revert in emaciation to quite the same type of lobulated, fat-free organ as in emaciated infants (fig. 2).

Maximow's [8] extensive study of cell origins and transformations also led him to doubt the relation of fat cells to fibroblasts. He depicted the specialized fat cells in the emaciated omentum as entirely distinct from the fibroblasts and also showed fat cells developing from undifferentiated mesenchymal cells about the blood vessels. Possibly fat tissue may develop in adults from persisting undifferentiated mesenchymal cells. The fact that fat cells do not have the power to multiply may be looked on as an evidence of their high degree of specialization.

In recent years the study of adipose tissue has been particularly advanced by the work of Friedrich Wassermann [9] and his associates, which has shown more clearly the relation of the primitive fat organ to the small vessels and its origin from perivascular mesenchymal cells related to the reticulum. Hence the fat organs are formed from the same embryonic elements as the lymph nodes, namely, capillaries and reticulum cells of the vascular adventitia, which relationship is attested by the tendency for lymphoid tissues sometimes to replace fat tissue, and conversely, as seen especially in the thymus. So too the close relationship of bone marrow and adipose tissue is explainable, and also the occurrence of extramedullary hemopoiesis in adipose tissue.

FUNCTIONAL ACTIVITY OF ADIPOSE TISSUE

In other words, the adipose tissue is to be looked on as part of the reticulo-endothelial system, a conception which suggests more active function for adipose tissue than has been generally recognized, and in harmony with the glandlike histologic character of the unfatted fat organs. For example, Bernard Portis [10] showed that the ability of the omentum to produce antibodies is correlated with the occurrence in this adipose organ of aggregates of reticulo-endothelial cells which appear histologically quite like the primitive adipose tissues before fat storage has begun. Wassermann says also that in adipose tissue "under certain conditions the blood cell formation may be reestablished, with or after discharge of the stored fatty material, the reticulum being restored in its original condition. Such lability and preparedness for functional change is characteristic in high degree of the fat organs of the omentum."

I am furthermore prepared to accept the view that even while still distended with fat the fat cells may be carrying on important functions not as yet disclosed, for the mere presence of a load of fat need not seriously impair other activities. In such distended cells there is presumably just as much nuclear material and cytoplasm as there was before the fat was deposited, and these functioning elements, being outside the fat, are in immediate contact with the blood supply over a much greater area than in the fat-free cells. Even extreme fatty degeneration and infiltration of parenchymatous cells are not necessarily associated with marked inter-

Fig. 2.—Periadrenal adipose tissue (× 310) completely depleted of fat from extreme emaciation taken from a woman aged 66 weighing only 68 pounds (31 Kg.). Death resulted from cancer of the pancreas.

ference with function. The liver heavily infiltrated with fat may respond well to functional tests. Indeed, even toxic fatty metamorphosis may fail to be associated with marked impairment of function. I once carried out an experiment designed to give a crucial test to this question, using as my criterion the ability of dog liver to oxidize uric acid.[11] This function was selected for the test on the principle that functions acquired most recently in evolution are usually the ones most easily lost or inhibited. Now of all the steps of purine metabolism the oxidation of uric acid is the one most recently evolved, so that only mammals, and not all of them, exhibit it. Furthermore, in species possessing this function it is not present until just about birth. Therefore, thought I, if any cell function is impaired by fatty degeneration of the cells, this oxidation of uric acid should be the one to go early. So I produced maximum degrees of fatty change in dogs' livers by poisoning the

8. Maximow, in von Möllendorff, Wilhelm: Bindegewebe und blutbildende Gewebe, Handbuch der Mikroskopischen Anatomie des Menschen **23**: 232 (part 1) 1927.

9. Wassermann, Friedrich: Ztschr. f. Zellforsch. u. mikr. Anat. **3**: 235, 1926; Ergänzungsheft, Anat. Anz. **63**: 135, 1927; **67**: 181, 1929; Ztschr. f. Kreislaufforsch. **23**: 665 (Nov. 1) 1931; Sitzungsb. d. Gesellsch. f. Morphol. u. Physiol. in München **41**, June 7, 1932; **42**, Nov. 7, 1933.

10. Portis, Bernard: J. Infect. Dis. **34**: 159 (Feb.) 1924.

11. Wells, H. G.: J. Exper. Med. **12**: 607, 1910.

animals with both phosphorus (which attacks most the peripheries of the liver lobules) and phenylhydrazine (which attacks the centers) and tested the ability of these extremely fatty liver cells to oxidize uric acid. They did it just as well as the normal control liver tissues.

Wassermann says that the "brown fat," lobules of which are regularly found in man although in volume far less than the reticular adipose tissue, differs in being a cellular fat organ which is formed by separation out from the primitive fat organs of free cells which lay on small droplets of fat in "mulberry" fat cells, which are the true lipoblasts. When the fat is resorbed from these cellular fat organs the resulting cellular aggregates resemble paraganglionic organs. "As the fat lobules are reticulo-endothelial organs one cannot speak of fat tissue as of a simple tissue. . . . It is incorrect to distinguish between the two older conceptions of 'fat tissue' as of connective tissue nature according to Flemming,

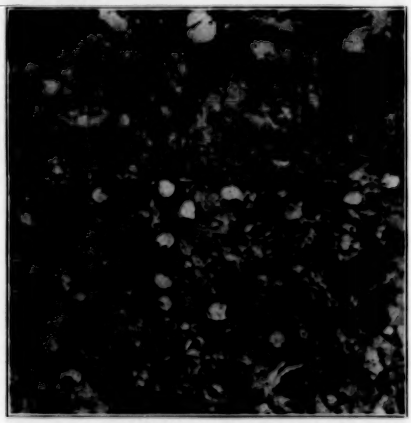

Fig. 3.—Serous atrophy of fat (× 240). Illustrating the capacity of depleted fat cells to take up water. Vertebral marrow taken from same patient described in legend for figure 2.

or as a specific tissue according to Toldt. Neither teaching is tenable with our present understanding."

Dogliotti [12] has shown that both brown and white fat tissue cells store vital dyes, like reticulo-endothelium, which process is especially well seen in depleted fat cells. Bremer [13] has demonstrated that even the thin cytoplasmic ring about fat-distended cells exhibits the property of taking up granules of vital stains, further indicating the existence of unrealized capacities for functional activity by fat tissue even when distended with fat.

To regulate the functional activity of the fat organs an abundant nerve supply to both the vessels and the parenchyma is present, as demonstrated by Hausberger in Wassermann's laboratory. Section of the nerve supply modifies the behavior of the fat cells in storing and yielding fat. Beznák and Hasch [14] have shown that it is the sympathetic fibers that control both deposition and mobilization of fat in adipose tissue, and Boeke [15] has demonstrated sympathetic nerve fibers running to individual fat cells. Sympathetic control is also shown by the occurrence of facial hemiatrophy from irritation of sympathetic trophic fibers (Goering [16]).

Wassermann has advanced the idea that in such organs as the mammary gland of rodents the intertubular fat tissues seem to play a role in the function of the gland as a whole. The changes required by alternating activity and quiescence are facilitated because the vascular structure of the adipose tissue makes unnecessary a rebuilding of vascular and supporting structures. Apparently when the glandular elements assume preponderance the character of the adjacent fat organ is altered, the mesenchymatous elements being crowded out of the vascular system and assuming the character of stroma. With cessation of tubular function the components of the fat organ come to the fore. Perhaps such transitions take place in other organs, which process has been designated as adiposity ex vacuo. Wassermann says that while sometimes connective tissue cells may take up fat, especially under pathologic conditions, this is merely an exhibition of a phagocytic function. But in such cases the fat, like phagocyted pigments, is a foreign material, and its taking up a scavenger or defense reaction, very different from the deposition and resorption of fat in the fat organs. The latter activity, like the taking up of iron for erythropoiesis, is a function of the reticulo-endothelial organs and not possible for fibrocytes. During fat resorption from ordinary white fat tissue the large drops do not simply grow smaller but the fat is taken up by the cell cytoplasm and consumed therein.

Eger,[17] in a recent review on "the fat organs and their significance for metabolism with special consideration of the so-called brown fat," considers the brown fat to be different from white fat even though they have the same origin, for the cells do not assume the signet ring type ordinarily, although some investigators maintain that sometimes they do. He found that the interscapular brown fat of rats uses much more oxygen during in vitro metabolism experiments, with a respiratory quotient never over 1, and so differs from white fat not only morphologically but also functionally. He also says that Wendt injected an extract of brown fat of the hedgehog into rats and observed a 20 to 30 per cent fall in basal metabolism. Why brown fat is brown seems to be a mystery, since no pigment can be found in it. Adler-Mönnich and Tiberi [18] also found a difference in the metabolism of brown and white fat, for in a sugar-free Tyrode solution more sugar appeared after incubation with the brown fat, which has a greater oxygen consumption, a lower respiratory quotient and a greater anaerobic glycolysis. Hausberger [19] especially has shown the ability of interscapular fat organs to form fat from carbohydrate by way of glycogen deposited in the fat cells, which is corroborated by several other investigators cited by Adler-Mönnich and Tiberi, who emphasize the influence of nerve control on storage and metabolism. The activity of adipose tissues is also indicated by Schoenheimer's [20] studies with fat marked

12. Dogliotti, G. C.: Ztschr. f. Zellforsch. u. mikr. Anat. **8**: 222 (Dec. 27) 1928.
13. Bremer, J. L.: Anat. Rec. **70**: 263 (Feb. 25) 1938.
14. Beznák, A. B. L., and Hasch, Z.: Quart. J. Exper. Physiol. **27**: 1 (July) 1937.
15. Boeke, J.: Ztschr. f. mikr.-anat. Forsch. **33**: 233, 1933.
16. Goering, in Müller, L. R.: Lebensnerven und Nerventriebe, ed. 2, Berlin, Julius Springer, 1924, p. 403.
17. Eger, W.: Klin. Wchnschr. **17**: 1033 (July 23) 1938.
18. Adler-Mönnich, Josef, and Tiberi, Renzo: Wien. Arch. f. inn. Med. **30**: 259, 1937.
19. Hausberger, F. X., and Gujot, O.: Arch. f. exper. Path. u. Pharmakol. **187**: 647 (Nov. 29) 1935.
20. Schoenheimer, Rudolf, and Rittenberg, D.: J. Biol. Chem. **111**: 163 (Sept.) 1935.

with heavy hydrogen, which showed that most of the food fat is deposited in the adipose tissue before being used.

Wassermann found that the thin rim of cytoplasm of the distended fat cell can swell up with fluids and suggests that adipose tissue may play a role in water metabolism. This view is supported by the remarkable and deceiving water losses and retentions observed in defatting treatments of the obese, as especially emphasized by Newburgh.[21] The capacity of depleted fat cells to take up water is sometimes seen in serous atrophy of fat, as shown in figure 3, in which, because enclosed in bone, the depleted fat cells could not shrink and became extremely hydropic.

GLANDULAR ADIPOSE TISSUE

There is no question as to the specialization of the adipose tissue in certain locations and species, especially in the so-called hibernating glands. These are prominent anatomic features, with characteristic location and appearance. Rasmussen [22] says that this tissue has been found in forty-seven species (five insectivora, nine chiroptera, thirty-three rodentia) most of which hibernate, but it is also present in some animals that do not hibernate, e. g., rats, mice and rabbits. So glandlike is this tissue that Buffon said that in the marmot it resembled the mammary gland of a cow. Microscopically this specialized adipose tissue differs from ordinary fat tissue in having the fat in relatively small globules instead of in a single large droplet, with a round nucleus instead of a flattened nucleus crowded against the cell wall by the fat. That is to say, the hibernating glands retain the structure characteristic of the so-called preadipose tissue. This is well brought out by the two illustrations from Rasmussen of human infantile perirenal adipose tissue and the axillary brown adipose tissue of the rat respectively. No matter how fat the rodent becomes, these cells do not lose their moruloid structure to become signet ring fat cells, and when the fat is depleted by starvation they retain their gland cell character, never reverting to a fibroblast character.

The function of this tissue in hibernation is not known. It is too widespread to permit of successful extirpation experiments. Once it was looked on merely as a reservoir of fat for use during the period of fasting, but this is made improbable by the fact that it can furnish only an insignificant amount of food, at best but one twentieth to one thirtieth of the tissue weight lost in hibernation. From time to time a relation to the endocrine system has been suggested, partly because of its resemblance to the fatty involuted thymus or to the vacuolated cells of the adrenal cortex. Cramer [23] points out a supposed richness in lipoids of these adipose glands as evidence of a relation to the endocrine system. Finding that these lipoids are retained in the cells during simple starvation but disappear in animals on a vitamin deficiency even without starvation, he suggests that the moruloid cells have the function of a storehouse for vitamins and lipoids. In simple loss of fat from undernutrition the lipoids of this tissue disappear to such an extent that it may look almost like a blood clot because of its great vascularity. Of some possible significance is the fact that the adrenal, and in some species the ovary, is embedded in this sort of tissue and that the adrenal cortex and lutein cells resemble the adjacent multilocular fat cells in their richness in lipoids. In favor of Cramer's hypothesis is the fact that this structure seems to be important for hibernating animals, as indicated by its prominence in them. As it furnishes an insignificant quantity of stored food during hibernation, it may well be that it furnishes an important quality of material.

The evidence that the content of the glandular adipose tissue is largely lipoidal has been given only by microchemical methods—Cramer not having made chemical analyses—but he calls it the "lipoid gland" or "cholesterin gland." Carlier and Evans [24] found in the hedgehog only a trace of lecithin as inferred from the phosphorus. Cramer's ideas have received support recently from Tonutti,[25] who found microchemical evidence of lipoid richness in brown fat and evidence that fat-soluble vitamins are stored here. Animals deprived of vitamin A or D have brown fat cells containing no plastosomes and only a fine network staining black with osmic acid. On being fed either of these vitamins this osmophil structure disappears and plastosomes accumulate, apparently storing the vitamins.

Hoepke and Nikolaus [26] have recently also demonstrated the probable presence of vitamin C in the hibernating gland of the hedgehog, as well as a lipoid resembling cerebron of unknown function. They suggest that water formation from stored fat in hibernating animals may provide needed water, as it is said to do in the camel's hump. Wendt's [27] observation that an extract of hedgehog hibernating gland injected into rats lowers basal metabolism, blood pressure and heart rate suggests that this tissue functions by suppressing metabolism during the winter sleep, perhaps through action on the endocrine tissues.

HUMAN GLANDULAR ADIPOSE TISSUE

Although man is not a hibernating animal, glandular adipose tissue of somewhat similar structure is found in some parts of his body, particularly in the dorsocervical and interscapular region. Hatai [28] pointed out the resemblance of this tissue to the hibernating glands, and it was further studied by Bonnot.[29] It is composed of lobulated masses of adipose tissue in which the cells are mostly of the multilocular type and is associated with lymphoid tissue, a fact explained by Wassermann's observations. Its dark color in old bodies indicates its resemblance to the so-called brown fat of rodents. Its special nature is indicated by the resemblance to pancreas of the fresh tissue when well nourished; in emaciated subjects it is red because of the vascularity. Even under normal conditions its fatty character is not suspected until it is examined microscopically (Rasmussen). The fact that these masses are particularly conspicuous in cretins (Shattock) and in them disappear with thyroid treatment supports Cramer's theory that the glandular adipose tissue is related to the endocrine system, as does the histologic resemblance to adrenal cortex.

The perirenal fat tissue in man exhibits some of the characters of glandular adipose tissue, the cells being more or less multilocular when not too well filled with fat, although in well nourished adults they appear like ordinary fat tissue. In infants the multilocular type of cells is often distinct, especially if nourishment is poor.

21. Newburgh, L. H.: The Cause of Obesity, J. A. M. A. **97**: 1659 (Dec. 5) 1931.
22. Rasmussen, A. T.: J. Morphol. **38**: 147, 1923; Endocrinology **6**: 760 (Nov.) 1922.
23. Cramer, W.: Brit. J. Exper. Path. **1**: 184 (Aug.) 1920.
24. Carlier, E. W., and Evans, C. A. L.: J. Anat. & Physiol. **38**: 15, 1903-1904.
25. Tonutti, E.: Klin. Wchnschr. **15**: 1788 (Dec. 5) 1936.
26. Hoepke and Nikolaus: Ztschr. f. mikr.-anat. Forsch. **46**: 1, 1939.
27. Wendt, C. F.: Ztschr. f. physiol. Chem. **240**: IV (parts 2-4) 1937.
28. Hatai: Anat. Anz. **21**: 369, 1902.
29. Bonnot: J. Anat. & Physiol. **42**: 43, 1908.

Shaw has described multilocular fat cells in the subpleural tissue of infants, and others have observed it about the trochanters, in the axillas and elsewhere. Inglis [8] has reported a "lipoma glandulare" and a cystic angioma arising in the interscapular gland. Reuben and Peskin [30] also have reported a cystic tumor in the interscapular gland of a 4 weeks infant.

SPECIALIZED FAT TISSUES

There exist in many species of animals masses of adipose tissue so localized or so behaving that they evidently have special purposes or so located or developed that they constitute special racial or species characteristics. Among these, particularly interesting is the so-called sucking pad or corpus adiposum buccae.

Fig. 4.—Steatopygy. Hottentot-Bushman type of fat deposit in male American Negro aged about 55.

Although Bichat is commonly given credit for recognizing the fatty nature of this structure, it really was described and known long before his report in 1801. It has been most exhaustively discussed and studied by Scammon,[31] who found it present not only in infants but in adults of all ages, there being no relation between its size and the age or condition of general nutrition. Sometimes it is absent on one side and present on the other. It occupies the fossa bounded by the masseter, buccinator, zygomatic and platysma muscles. The parotid duct passes across it. The function is supposed to be to prevent collapse of the cheeks in sucking so that they are not drawn in between the jaws. Although structurally isolated, and persisting despite emaciation, it seems not to exhibit the moruloid fat cells of glandular adipose tissue. Chemically it is said to have fats of higher melting point than subcutaneous fat (Lehndorff), but this difference is too slight to be significant (Shattock). Cameron [32] in 1921 was able to find fifteen cases of lipoma of this structure in the literature and reported a sixteenth lipoma weighing 36 Gm. It has also been known to herniate beneath the buccal mucosa after traumatism, forming an intra-oral tumor.[33] What was interpreted as a myxosarcoma of the sucking pad in a six months fetus was reported by Zahn.[34]

In emaciated infants the sucking pads may become extremely prominent because they are not absorbed as is the subcutaneous fat, so that they may be mistaken for abscesses or other pathologic conditions, and bilateral inflammatory hyperplasia has been reported.[35] What enables the fat to persist here, despite a good vascularity, when the rest of the fat is being depleted is an unsolved problem. Lasch [36] found the iodine number higher in the cheek pad fat than in the abdominal fat, and it was still lower in the subcutaneous fat, this being in reverse order to their rates of disappearance in emaciation; but whether these two facts are related is not known. The sucking pad may become merely a gelatinous watery mass, but still a pad, in extreme emaciation.

Of interest is the finding by Shattock of this structure in infant chimpanzees and baboons but not in a monkey.

STEATOPYGY

Shattock [37] has discussed at length steatopygy and other matters related to adipose tissue. He says that the prominent buttocks of Bushmen and Hottentots are the most notable human examples of such local obesity. The black Hottentots are derived from the Bushmen, who are yellow, through crossing with Bantus. These structures were studied by Cuvier in 1815 in a Bushwoman exhibited in Paris as the "Hottentot Venus." Like the camel's hump, the buttocks become flabby during emaciation.

Hooton [38] says that in true steatopygy the fatty mass is traversed in all directions by connective tissue and rests on the gluteus maximus. When viewed in profile the fatty mass has a shape approximating a right triangle, the mass sloping downward and inward to meet the thigh. This characteristic shape is not encountered in the majority of fat European or Negro women, in whom the buttocks are rounded rather than pointed. Miller [39] notes the resemblance of the fat deposits in a woman with acromegaly to steatopygy and raises the question whether racial differences may depend on genetic endocrinologic differences. The condition is not confined to the females; at Oak Forest Infirmary there has been for years a Negro with typical steatopygy who told me that his mother and a sister presented the same condition; he has no children (fig. 4).

Steatopygous figures and carvings are found in ancient Egyptian relics, believed by Petrie to represent African captives or the product of intermarriage (e. g. the Queen of Punt, eighteenth dynasty [Somaliland] about 1500 B. C.). "Darwin cites Burton to the effect that the Somal men are said to choose their wives by ranging them in a line and by picking out her who projects farthest *a tergo*." The gluteal hump is independent of any enlargement of the thigh in the modern Hottentot-Bushman steatopygy. Some early Grecian pottery figures reproduce typical steatopygy, according to Shattock. From a study of archeologic evidence, Petrie says "There is thus a series of five regions in which the steatopygous race appears, and which lie apparently from north to south in the order of successive dates of the remains." All are closely related geographically to Africa and the Mediterranean, so their common origin in Africa seems assured.

HUMPS OF CAMEL AND ZEBU

Shattock says "These steatopygous accumulations we must view, indeed, as strictly analogous to the dorsal store of fat, say, on the back of the camel." When the

30. Reuben, M. S., and Peskin, A. R.: Arch. Pediat. **45**: 243 (April) 1928.
31. Scammon, R. E.: Anat. Rec. **15**: 267, 1918-1919.
32. Cameron, A. L.: Lipoma of the Corpus Adiposum Buccae, J. A. M. A. **76**: 778 (March 19) 1921.
33. Brugger: Deutsche Ztschr. f. Chir. **212**: 398, 1928.
34. Zahn, F. W.: Deutsche Ztschr. f. Chir. **29**: 387, 1885.
35. Neff, F. C., and Billingsley, J. A.: Hyperplasia of the Corpora Adiposa Buccarum, Am. J. Dis. Child. **40**: 813 (Oct.) 1930.
36. Lasch, W.: Jahrb. Kinderh. **107**: 223 (Nov.) 1924.
37. Shattock, S. G.: Proc. Royal Soc. Med., Path. Sec. **2**: 207, 1909.
38. Hooton: Harvard African Studies **2**: 83, 1918.
39. Miller, G. S., Jr.: Am. J. Phys. Anthropol. **14**: 79 (Jan.-March) 1930.

camels are starved, this "hump" hangs down. It serves as a supply on the desert, the nutritive companion to the famed water supply of this beast, and is composed of unilocular fat. The hump on the withers of the zebu differs in containing some muscle, which may serve as a store of protein since no motor function is evident for this tissue. The hump of the bison is not a store of fat but is due to the length of the spinous processes of the vertebrae.

FAT DEPOSITS IN THE TAIL

In certain small marsupials this deposition is conspicuous and may serve in estivation or hibernation. Much more striking are the fat-tailed sheep, of which there are several breeds, chiefly in the Orient and South Africa. One collected by Hunter is pictured by Shattock. Herodotus describes such sheep as follows: "There are also in Arabia two kinds of sheep worthy of admiration, the like of which is nowhere else to be seen. The one kind has long tails not less than three cubits in length, which, if they were allowed to trail on the ground, would be bruised and fall into sores. As it is, all the shepherds know enough of carpentry to make little trucks for their sheeps' tails. The trucks are placed under the tails, each sheep having one to himself, and the tails are then tied down upon them. The other kind has a broad tail which is sometimes a cubit (18 inches) across." The Jewish Bible speaks of the sacrifice of the fat-tailed ram. To this day in South Africa the tail of the sheep is supported by a small truck on wheels even as in Arabia in the days of Herodotus. Other species of animals have also localized fat deposits. In man the perirenal fat is a special depot in that it resists absorption longer than most other deposits. Salmon and other fish exhibit adipose fins that seem to be merely fat deposits and not functioning structures.

One of the first serious efforts to study the question of whether adipose tissue has any other function than fat storage utilized the broad-tailed sheep for this purpose. Schaternikoff and his colleagues [40] removed the tail, weighing 6,765 Gm., from one of these animals and found that the respiratory quotient was higher after the operation, indicating that the adipose tissue forms fat from carbohydrate. "From our investigation it may perhaps follow that the role of adipose tissue is greater than is usually assumed. It is not only a simple fat reserve but it also assumes a certain part in synthetic and cleavage reactions of the living organism. These conclusions are merely provisional." These conservative conclusions from a large scale study have been fully supported by more recent studies on the fat tissues by micromethods, as indicated previously.

PERIAORTIC FAT PADS

The masses of adipose tissue at the base of the heart of dogs [41] and other animals as well as in man seem to have an existence somewhat independent of the general adipose tissue. In man they seem to increase with age, independent of the amount of body fat elsewhere. They seem to be particularly prominent in persons with coronary artery disease and fibrous myocarditis and may, through their arteries, furnish a source of collateral circulation.[42]

(To be continued)

40. Schaternikoff, M. N.; Molischanowa, O. P., and Tomme, M. T.: Arch. f. d. ges. Physiol. **218**: 216, 1927.
41. Davis, D. J.: The Periaortic Fat Bodies, Arch. Path. **4**: 937 (Dec.) 1927.
42. Robertson, H. F.: Am. J. Path. **6**: 209 (March) 1930.

EXPERIENCE WITH ARTIFICIAL IMPREGNATION IN TREATING STERILITY

REPORT OF THIRTY-FIVE CASES

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Because of the great interest physicians have manifested in artificial impregnation as a method for treating certain cases of sterility and because of the public interest evoked by reference to this subject in the popular press, it seems appropriate to report one's experience with this procedure in a series of consecutive and unselected cases. Seventeen cases in which the husband was infertile and the wife was inseminated with a donor specimen from one to six times with eight [1] successes will be briefly abstracted, and eighteen additional problems, in which the uterus was instilled with the husband's specimen a total of thirty-seven times with four pregnancies, will be analyzed. All these patients were cared for in private practice except one in the latter group, successfully treated by my associate, Dr. McLane, in the Sterility Clinic at the New York Hospital. Numerical results may be far from impressive, partly owing to discouraging conditions, but the perplexing problems encountered in the management of these cases may prove of some interest. These cases are few in number, comprising but a small percentage of the whole sterility series, because proper indications are relatively rare; many patients have an antipathy for or are uninformed regarding semiadoption by the use of a donor specimen, and I have not assumed the responsibility of recommending this procedure in a single instance. As the processes of reproduction are better and more generally understood by the public, it seems obvious that consultations concerning semiadoption will become more frequent, and physicians should be prepared to render this service.

HISTORICAL SURVEY

While contributions concerning artificial impregnation in the human species are relatively rare and often fragmentary or restricted to a very few successful efforts, one surmises that the use of a foreign specimen has been tried by many physicians in isolated and unreported cases. There is ample evidence, however, that the injection of the husband's specimen to the uterus is too frequently employed and often without understanding of the indications, the principles of technic or the risks involved. This procedure and the indiscriminating use of glandular therapy have replaced curettage as the empirical panacea for sterility and should be as forcefully discountenanced. I am informed by Professor Himes,[1a] who made an extensive review of anthropologic literature in studying the history of contraception, that no reference to artificial impregnation by preliterate people was noted. Credit for the first successful employment of this method is usually given to John Hunter, who, in a case of hypospadias, artificially transferred the semen to the vagina. Although this case was not

1. Since this article was written, patient 353 has been successfully impregnated for the second time by cervical insemination on the tenth day of the cycle; and the very obstinate problem 446 (entered as a failure) has terminated successfully by treatment on the tenth day of the cycle, ovulation being indicated by increased cervical secretion which coincided with the lowest basal temperature record made over a period of two months, in accordance with the technic of T. T. Zuck (The Relation of Basal Body Temperature to Fertility and Sterility in Women, Am. J. Obst. & Gynec. **36**: 998 [Dec.] 1938).

1a. Himes, N. E.: Medical History of Contraception, Baltimore, Williams & Wilkins Company, 1936.

reported until 1799 by Everard Home,[2] it is thought to antedate the artificial fecundation of a dog which was recorded ten years earlier by Spallanzani.[3] In this country Sims [4] in 1866 is credited with the first successful experiment in this field. A sterile patient with a poorly developed and retroverted uterus, complicated by cervical stenosis, was finally impregnated after many injections of the husband's specimen. He tried the method on six other patients with poor results. Three years later Girault [5] reported a few successful results (the first having occurred in 1838), the husband's specimen evidently having been used in these cases. In the latter part of the century Gérard discussed sterility and the indications and technic for artificial impregnation in a humorously illustrated semiscientific book which is not dated and is said to be very rare. In the early part of this century several articles describing the results of mechanical fecundation in the breeding of animals made their appearance. Iwanoff's [6] work in 1907 seems to be of major significance, and subsequent studies [7] by French and Russian investigators are largely based on his procedures and will not be further discussed. The largest series in the human species is that reported by Schorohowa [8] in 1927, consisting of eighty-eight cases with thirty-three successful results. Séguy [9] reported on two series in 1935. In the first (1924-1925) a total of twenty-four treatments was given to a few women without a single successful result. A second series covering a period of five years (1924-1929) included sixteen cases with seven successful results. Donor specimens were used in only two cases. Scientific data are limited. More recently one successful case has been reported by Seashore,[10] and Stokes [11] describes his technic and claims success in a number of cases which are not classified. There are perhaps two or three other papers discussing the theory of the procedure and the results of other investigators, and Seymour [12] relates unique experiments in this field and seems to attain results not equaled by other reporters.

In choosing a donor the physician has certain obligations to discharge for the prospective parents, but he should recognize and frankly state the limitations of responsibility which he can assume. Little difficulty has been met in securing healthy young men of education, good breeding and fine family for this purpose. Chief emphasis has been placed on character. Familial and transmissible diseases were avoided. A negative Wassermann report and a history of freedom from genital infection have been considered imperative. All donors were of American ancestry but racial factors were carefully matched. The greatest difficulty has been encountered in securing donors with high indexes of fertility as well as personal qualifications, six applicants being examined in one group to secure two donors whose seminal criteria were satisfactory. Requests for a straight Anglo-Saxon ancestry could be fulfilled, but in one or two instances when scientifically trained patients raised the question of color of eyes and other traits I promptly refused to accept any responsibility as to the operation of the mendelian law. Inquisitive patients have been told that possibly more care had been exercised in selecting donors of good ancestry than is commonly exercised by young people in choosing their marital companions and further responsibility would not be assumed. This reply is usually satisfactory.

LEGAL CONSIDERATIONS

Laws governing general medical practice are, of course, applicable to this procedure but I am informed that there is no specific statute in New York state regarding this work, and an expert in real estate law found no ruling on property rights relative to this method of semiadoption. To recommend any legal procedure would probably be unwise, as the physician will doubtless be guided by circumstances and personalities. A simple written consent signed by the husband and wife and histories filed indicating that both parties have submitted to preparatory examinations should constitute adequate protection. Instances may arise in which patients are slightly known and more formal permission may be desirable. In one instance, in which the inquiring couple were being forced by a wealthy relative to take this action against their obvious desires, I refused to proceed. Patients are told, incidentally, that no foreign body such as semen can be introduced within the uterus without a slight risk of reaction and that the same chances of abnormal labor and defects in progeny are involved as in any delivery. Patients have been influenced not to invite the chance of later trouble by selecting any member of the family as donor. Certain legal aspects of this problem and an interesting suggestion of subsequent legal adoption may be found in an editorial in THE JOURNAL.[13]

TECHNIC

Only principles in technic can be properly discussed, for lack of experience, inability to correlate variations in procedure with results and the unknown factors involved make definite recommendations impossible and an imposition on credulity.

While experimenters, too numerous and well known to permit naming, have given much information regarding the correlation of ovulation with the menstrual cycle, the selection of the day on which to introduce the semen remains a perplexing problem. The daily examination of vaginal smears to determine the date of ovulation is cumbersome and difficult of interpretation, and much obscurity persists as to whether the demonstration of the follicle-corpus luteum sequence of influence is a certain criterion of the liberation of a healthy ovum. With rare exceptions I have found the menstrual cycle to vary from twenty-six to thirty days in length in the so-called regularly menstruating women, and greater differences are not rare. Except in cases studied by Papanicolaou I have chosen the eleventh to the fifteenth day of the cycle for insemination, depending, when possible, on predominant habits as noted in the past menstrual calendar. Earlier days have been selected for patients with habitually short cycles.

With few exceptions, semen specimens have been produced at the office, collected in a previously prepared sterile and absolutely dry glass container and

2. Home, Everard: Account of the Dissection of a Hermaphrodite Dog, Philosoph. Tr. Roy. Soc. London **18**: 162, 1799.
3. Spallanzani, Lazaro: Dissertations Relative to the Natural History of Animals and Vegetables, London, J. Murray, 1789, vol. 2, p. 250.
4. Sims, J. M.: Clinical Notes on Uterine Surgery, with Special Reference to the Management of the Sterile Condition, New York, William Wood & Co., 1866.
5. Girault: Etude sur la génération artificielle dans l'espèce humaine, Paris, 1869, p. 13.
6. Iwanoff, E. E.: De la fécondation artificielle chez les mammifères, Arkh. biologicheskikh nauk. **12**: 377-508, 1907 (bibliography of eighty-four titles).
7. Walton, A.: The Relation between Density of Sperm Suspension and Fertility as Determined by Artificial Insemination of Rabbits, Proc. Roy. Soc. London, series B. **101**: 306 (April) 1927.
8. Schorohowa, A. A.: Fécondation artificielle dans l'espèce humaine, Gynec. et obst. **13**: 132 (Feb.) 1927.
9. Séguy, J.: Au sujet de l'insémination artificielle dans l'espèce humaine, Bull. Soc. de sexol. **2**: 417-419 (Nov.) 1935.
10. Seashore, R. T.: Artificial Impregnation, Minnesota Med. **21**: 641-644 (Sept.) 1938.
11. Stokes, W. R.: Artificial Insemination, M. Ann. District of Columbia **7**: 207-211 (July) 1938.
12. Seymour, Frances I.: Viability of Spermatozoa in the Cervical Canal: Preliminary Report, J. A. M. A. **106**: 1728 (May 16) 1936.
13. Artificial Insemination and Illegitimacy, editorial, J. A. M. A. **112**: 1832 (May 6) 1939.

transferred to the woman as soon as sufficiently fluid to permit easy handling in a sterile dry cannula. In one of our successful cases, however, the husband's specimen was more than an hour old. Various cannulas have been tried, but the most suitable one for general use seems to be that which I described some years ago for aspirating the cervical secretions and now widely distributed for that purpose. Arrangements are so made as to eliminate any chance of contact between the donor and the patient.

For the operation, the patient is placed in the Sims position because she is better relaxed, her vision is directed from the field of operation and the Sims speculum can be better removed without spilling the bulk of semen, which is to remain bathing the cervix whether simple insemination or injection to the uterine cavity is carried out. When injecting a donor specimen into a patient having a fully patulous cervical canal with normal secretions, a few minims of semen (0.5 cc. or less) is held in contact with these secretions for approximately five minutes to insure ample sperm invasion. Success has also followed simple insemination in such cases and may be as efficient. When the husband's specimen is to be instilled into the uterine cavity not more than 10 minims (0.6 cc.) is used so that there is no danger of invading the tubes and producing severe colic and possibly inflammatory reaction. Under proper conditions only slight pressure is usually required, but I have subjected semen to a pressure of 200 mm. of mercury for one minute without altering its microscopic appearance. When the specimen has been placed and evidences of the procedure have been removed from the room the patient assumes the dorsal position and continues reclining for at least one half hour. A very few patients have suggested and tried emotional preparation at home just prior to insemination. Physiologic results are unevaluated.

INDICATIONS FOR DONOR SPECIMEN

The infertility of the husband, established beyond reasonable doubt by the causative factor or the failure or inaccessibility of appropriate treatment, is the primary indication for utilizing extramarital semen. The consultant should, when considered necessary, confirm the validity of this indication and ascertain that the husband is assured of the facts and reconciled to the procedure. In one instance in which persistent necrospermia was diagnosed the rarity of the condition and the history of repeated transportation of the specimens in rubber containers led to a reexamination which revealed the normal fertility of the husband. The histories to be abstracted record hopeless azoospermia as a prevailing indication, but in a small minority high degrees of seminal deficiency unimproved by competent treatment seemed ample reason for the use of a donor specimen. Two couples in this group reported marital pregnancies one and three years, respectively, after delivery; one occurred after marked seminal improvement resulting from previously declined treatment, and the other was proved to be a rare instance of fecundation by a specimen with a low sperm count (16,000,000 per cubic centimeter, postgestational). In the entire sterility series there is an 0.8 percentage of cases in which pregnancy was brought about by specimens with normal motility but greatly reduced cell counts (19,000,000 or less per cubic centimeter, postgestational count). Hotchkiss [14] has reported similar cases.

14. Hotchkiss, R. S.; Brunner, H. K., and Grenley, Philip: Semen Analysis of Two Hundred Fertile Men, Am. J. M. Sc. **196**: 362-384 (Sept.) 1938.

Further essential indications, both positive and negative, refer to the wife and include (*a*) an understanding of and a stated desire for this method of fecundation, (*b*) reasonable evidence of her fertility, and (*c*) the absence of factors which would greatly increase the immediate risk of the procedure or seriously complicate an ensuing pregnancy. It would be presumptuous, even if space permitted, for me to attempt a definition of female fertility. A careful history and an examination of the wife should be included in plans for the treatment. The past history should eliminate suggestive symptoms of genital infection. One should emphasize that report of menstrual deficiency is not a reliable index of infertility, but when it is associated with obvious degrees of uterine underdevelopment serious doubt must be entertained. The examiner should note patulousness of the cervical canal to the cannula when artificial spermigration is to be undertaken, and endocervicitis should be regarded as a contraindication to uterine instillation. The pelvis should be free from palpable pathologic change and the patency of the tubes demonstrated. Partial occlusion presents implications which should be weighed with reference to the effectiveness of the method and the risk of ectopic pregnancy. Finally, the wife should be free from any disease which would render child bearing a hazardous undertaking.

While case abstracts seem essential for scientific appraisal, brevity demands that normal and irrelevant items be excluded. The reader may assume that within my ability constitutional factors have been weighed, sexuality appraised, adolescent histories reviewed, hereditary and endocrine influences cautiously considered, metabolic readings obtained, tubal patency confirmed, male urologic studies carried out and anatomic and functional observations correlated in all cases. Some interesting but nonessential facts have been omitted to safeguard identification. Unless otherwise stated, sterility was primary and deliveries have been successful to date. The day of menstrual onset is counted as the first day of the cycle, and insemination was carried out but once in any monthly cycle.

REPORT OF CASES

CASE 427.—The indication was azoospermia. Married three years, the wife, 23, was of normally feminine type. Menstruation, starting at 11, had a twenty-eight to thirty-five day cycle and a five day period with dysmenorrhea. Obesity occurred at 14 (170 pounds [77 Kg.]). Amenorrhea and late periods were experienced while studying in Europe. Acute anteflexion and stenosis were corrected under anesthesia. Endometrial biopsy (twenty-third day) revealed secretory and proliferative fragments. Six trials (twelfth to sixteenth day) failed. Normal ovulation was questioned. I arranged a study of vaginal smears by Papanicolaou, who reported very faint ovarian influence. Thyroid extract was begun (basal metabolic rate was —8), and two months later three postmenstrual injections of gonadotropic substance were given. Success followed cervical insemination on the fourteenth day of that cycle.

CASE 466.—Azoospermia was present. Permission and arrangements, including selection of the donor by the family, were carried out from a distance by cooperation with the family physician. The patient, 29, married five years, was uncooperative, studiously vague and chiefly interested in sight-seeing. Preliminary study was inadequate. Menstruation was normal, of twenty-eight day type. The specimen was sent by messenger without data and found of less than fair grade. Injection made at the end of the second week of the cycle under my protest gave an unknown result; failure was assumed.

CASE 211.—Semen was highly deficient. Treatment was unavailable; sterility had lasted one year. The wife was 23. Intermittent amenorrhea in adolescence was now relieved, with a normal cycle. Anteflexion of moderate degree was noted.

Insemination of a donor specimen at the end of the second week of the cycle was successful.

Case 406.—There was azoospermia. Married five years, the wife was 25, of small stature and immature type with mild uterine hypoplasia. Menstruation, starting at 14, had a twenty-eight day cycle and four day period. Donor specimens, in accordance with vaginal smear determinations by Papanicolaou, were injected on the fifteenth, tenth, thirteenth, twelfth and finally with success on the thirteenth day of the cycle. Dysproportion necessitated cesarean section.

Case 396.—The specimen was highly deficient, with only slight improvement. Married six years, the wife, 27, had asthma during adolescence and pneumonia at 14. Menstruation, starting at 16, had a thirty day cycle and five day period. The pelvis was normal. The endometrial biopsy revealed a normal secretory phase. The average basal metabolic rate was —16. Continuous thyroid therapy was given. A donor specimen was introduced on the fourteenth, thirteenth and fifteenth days of cycles with failure to date.

Case 353.—Highly deficient semen with many abnormal cells was unimproved by capable treatment. Married six years, the wife, 31, had mild uterine hypoplasia and cervical stenosis. Menstruation, starting at 13, had a twenty-seven day cycle and five day period. Office dilation was done to accommodate the cannula. After two requested and unsuccessful attempts with the husband's specimen, success followed the second trial of a donor specimen on the eleventh day of the cycle (incidental study by Papanicolaou).

Case 244.—Highly deficient semen in an otherwise healthy man was unimproved by treatment. Married fourteen years, the wife was healthy but had marked uterine hypoplasia, a long conical cervix and very scant periods. Menstruation, starting at 13, had a twenty-eight day cycle and three day period. Past history included curettage and x-ray stimulation to the ovaries. At the age of 42 a trial donor specimen was urgently requested to exhaust the possibility of relief. Two attempts on the eleventh and twelfth days of cycles failed, and adoption was advised.

Case 446.—Azoospermia was present. Married three years, the wife, 32, was normally feminine in type, with normal pelvis and a short menstrual cycle—from twenty-three to twenty-six days, with onset at 14 and a five day period (the patient refused any study which might indicate failure of ovulation and elected repeated trials). Attempts on successive months on every day of the cycle from the seventh to the thirteenth, inclusive, have failed to date. Incidental empirical treatment favorable to ovulation was given.

Case 340.—There had been suspension of sexual relations and sterility (secondary). The wife, 23, was married before she was 17. Gynecologic history began at 18. Abortion was induced in the Far East and the later history suggested acute salpingitis while on shipboard. The pelvis was sensitive but without palpable pathologic change. Contraindications were emphasized but the patient insisted and gave a written release from responsibility. Two trials on the twelfth and twenty-second days of cycles failed. Tubal reaction followed the second trial.

Case 245.—Highly defective semen and subnormal masculinity were treated unsuccessfully. The wife, 28 and sterile four years, had a normal pelvis and menstruation. Insemination with a donor specimen was done on the fourteenth, the tenth, and finally, successfully, on the fifteenth day of the cycle.

Case 447.—Azoospermia was present. Married four years, the wife, 27, was hyperfeminine and gracile in type; she had a scientific career. Menstruation, starting at 13, had a short cycle (eighteen to twenty-five days) and a seven day period with slow onset. Retroversion was correctible by pessary. The basal metabolic rate was —14. No response followed thyroid therapy, calcium or gonadotropic substance. Secretory endometrium was noted on the fifteenth day of the cycle. A donor specimen was injected on the eleventh, tenth, ninth and eighth days of cycles without result.

Case 449.—Azoospermia was present. Married six years, the wife was 30. Menstruation, starting at 11, had a thirty day cycle and six day period. The pelvis was normal except for moderate anteflexion and one small myoma (3 cm.). Injection of donor specimens on the twelfth, fourteenth and fifteenth days of cycles failed.

Case 465.—Azoospermia was present. Married ten years, the wife, 34, had a normal pelvis and normal twenty-eight day cycle. Success followed insemination on the eleventh day of the cycle. There was another success two years later with subsequent miscarriage.

Case 402.—Oligospermia and poor motility were unimproved by prolonged treatment. Married three years, the wife was 22. Menstruation, starting at 12, had a thirty day cycle and five day period. The pelvis was normal. A donor specimen was injected on the fourteenth day of the cycle, as noted by Papanicolaou, with success.

Case 343.—Testicular atrophy followed typhoid at puberty. Married six years, the wife was 34. Menstruation, starting at 14, had a twenty-four to twenty-six day cycle and three day period. The pelvis was normal. The basal metabolic rate was —13. Thyroid therapy was given. A donor specimen was injected twice on the eleventh and finally with success on the eighth day of the cycle.

Case 411.—The specimen was poor, but one child was born after a three year wait. Married ten years, the wife, 30, had several years' secondary sterility. A trial donor specimen was requested by the family physician because of the wife's mental condition. The pelvis was normal except for viscid cervical secretion. Menstruation, starting at 13, had a thirty day cycle and four day period. A trial on the thirteenth day was without success. The psychologic state improved.

Case 436.—Azoospermia was present. Married three years, the wife, 26, had a normal pelvis of male type. Menstruation, starting at 16, had a thirty day cycle and seven day period (amenorrhea occurred with change of environment). Trials on the fifteenth and thirteenth days of cycles failed.

INDICATIONS FOR HUSBAND'S SPECIMEN

The indications for injection of the husband's specimen into the uterine cavity for the relief of sterility are relatively rare. Many of the cases in our husband series were unsuitable, but the method was employed (when safe) in response to specific requests which involved ethical and psychologic considerations.

Failure of insemination or the inability of sperm cells to migrate to the cavity of the uterus because of weakness of the specimen or chemical or mechanical obstruction of the cervical canal constitutes the general indication for the procedure. As a matter of fact, however, most of these factors are correctible and such an attack on the problem is more efficient management.

I feel wholly unprepared to fix any standard criteria of semen defects which may justify or contraindicate the procedure. Postcoital studies of spermigration may be found of value under proper conditions. Infection anywhere in the seminal tract calls for urologic care both as a curative and as a precautionary measure. The significance to be given a high percentage of abnormal cells in the husband's specimen has been found a disturbing problem. As an experimenter, Engle [15] doubts the validity of the microscopic appearance of the cell as an index of its potential importance in abnormal pregnancies, while Williams [16] in a private communication relates evidence in animal reproduction which tends to show a cause-effect relationship. At the present time the physician has little positive evidence to help him in making a decision. Contraindications of a gynecologic nature have been discussed.

15. Engle, Earl, associate professor of anatomy, Columbia University College of Physicians and Surgeons.
16. Williams, W. L., professor, School of Veterinarians, Cornell University.

The successful cases in this group are abstracted as they present, in principle, indications commonly encountered.

CASE OF MRS. S. (Dr. McLane).—The husband was 35. The couple had been married eight years. There were hypospadias and incompetent relations. The wife, 30, had normal menstruation until onset of menorrhagia during the last eighteen months. A large single intramural myoma and patent tubes were noted. Myomectomy was done in February 1935 with a subsequent normal iodized oil picture. Beginning four months later, the husband's specimen was introduced on the eighth, the ninth, and successfully on the fourteenth day of the cycle.

CASE 254.—Semen was subnormal but rated potentially fecundating. The husband's duties precluded treatment. The couple had been married four years. The wife, 31, starting menstruation at 14, had a twenty-eight day cycle and five day period with rare ovulatory spotting. Two years before, the referring gynecologist had operated for adherent ovaries and retroversion fixed by endometriosis. The pelvic condition was satisfactory but spermigration was subnormal. Semen was introduced on the eleventh day of the cycle with success.

CASE 360.—Semen was normal. The couple had been married six years. The wife, 28, was sturdy but sensitive. Occasional colitis was unexplained after careful study. Hypothyroidism (—18) was present. The past history included two years' intermittent glandular therapy and dilation for disabling dysmenorrhea. Menstruation, starting at 13, had a twenty-seven to twenty-nine day cycle and three day period and was scant. There was marked obstruent anteflexion. A stem pessary was placed but found uncomfortable and removed, with relapse. By manipulation of the cervix semen was injected beyond the obstruction, the twelfth day of the cycle, successfully.

CASE 405.—The husband, 32, had deficient semen, transient impotence and hypothyroidism (—24). Definite improvement occurred in a few months. The couple had been married four years. The wife, 28, had marked anteflexion with cervical stenosis obstructing study. Menstruation, starting at 10, had a twenty-eight to thirty-five day cycle and four day period. Dilation was done for dysmenorrhea and diagnosis. Sterility persisted. There was relapse of stenosis. Semen was injected, with angulation reduced, on the eleventh day of the cycle and repeated on the twelfth day, with success.

In the fourteen unsuccessful cases, only two wives presented criteria of normal fertility. The fertility of five husbands was doubtful and none of the cases, in my tentative opinion, offered ideal indications. It is neither easy nor indeed always ethical to deny arbitrarily a trial for patients who come with hopeful expectations. Five couples were content, however, with a single effort.

One patient, after two failures under unfavorable conditions, was returned to her obstetrician with recommendations for care which resulted successfully in two months. Another, from a southern republic where some form of tracheloplasty had been performed, was found after an unsuccessful trial to have a high cervical stenosis barring the finest probe. After study and appropriate attention the patient returned home and reported a normal delivery fourteen months later. Seven women had suffered from marked endocervicitis, which in five instances had been preceded by induced abortions; this was followed, in one instance, with a wish-bone contraceptive pessary. All had been treated by cauterization with fair clinical results. The other two patients, young and intelligent, acknowledged gonorrheal infection. One, after intermittent treatment by various physicians, had submitted to cervical amputation without cure of the discharge. Though the smear was negative contraindication was urged, but the patient, after interviewing her physician, elected to take the risk twice. The other patient had been under expert supervision almost continuously both here and abroad. Excellent results had followed ionization of the cervix, but imperative operation had left but one tube (now reported patent) and a portion of one ovary on the same side. The attending gynecologist reported vaginal evidence of ovulation on the eleventh day.

Of the five additional failures, two were charged to marked seminal deficiency; in another case seminal defect was concomitant with marked uterine hypoplasia and oligomenorrhea; thickened ovarian tunicae had been noted at previous operation in another, and, finally, one patient gave suggestive signs of pelvic tuberculosis.

Clinical data and impressions have been briefly reviewed, but many of the biologic facts still belong among the imponderables.

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TREATMENT OF MUSCULAR DYSTROPHIES AND ALLIED CONDITIONS

PRELIMINARY REPORT ON USE OF VITAMIN E (WHEAT GERM OIL)

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The last decade has witnessed a renewed interest in the etiology and treatment of the muscular dystrophies and allied conditions. Milhorat, Techner and Thomas's [1] study of creatine metabolism and the results of the administration of aminoacetic acid to dystrophic patients and Meldolesi's [2] investigation of pancreatic function and his observation of a deficiency of proteolytic and tryptolytic enzymes in muscular dystrophies helped to focus attention on the metabolic aspects of this disorder. That vitamin E deficiency might also play a part in the causation of this condition was suggested by the observation of Blumberg [3] of muscular changes, growth retardation and malnutrition in young rats on a vitamin E deficient diet and by the production of paralysis in older rats suffering from avitaminosis E by Ringsted [4] and Burr, Brown and Moseley.[5] The dystrophic nature of these muscular changes was pointed out by Goettsch and Pappenheimer [6] in the guinea pig and rabbit and by Olcott [7] in the rat.

HUMAN MUSCULAR DYSTROPHY AND VITAMIN E

The possibility that muscular dystrophy in the human being was related to the type of muscular dystrophy observed in the guinea pig and rabbit maintained on a vitamin E deficient diet suggested the investigation of the influence of the addition of vitamin E (wheat germ oil) to the regular diet of a number of patients with muscular dystrophy and muscle atrophy. The patients consisted of a group of children with dystrophies seen

From the Neurological Service of the Elliot Hospital and the Crippled Children's Services of the State of New Hampshire.
Dr. Ezra A. Jones, Medical Director of Crippled Children's Clinics of New Hampshire, and Dr. Mary M. Atchison, of the New Hampshire State Board of Health, assisted in this investigation.

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at the Crippled Children's Clinics of the State of New Hampshire. Most of the patients were ambulatory and three were hospitalized for observation for a short time. The group included thirteen patients with muscular dystrophies, one patient with muscular atrophy following anterior poliomyelitis and one patient with advanced muscular atrophy coming on after an attack of neuromyeloradiculitis. In seven cases the treatment has progressed long enough for one to form definite conclusions as to the results.

METHOD OF TREATMENT AND DOSAGE

The first patient with muscular dystrophy was placed under treatment on April 21, 1939. He was given a proprietary mixture of wheat germ oil in capsule form, one capsule three times daily, each capsule containing 3 minims (0.2 cc.) of the oil, or a total of 9 minims (0.5 cc.) of wheat germ oil a day. Later it was found more expedient and less expensive to administer the oil in milk or with the food instead of in capsules, and the dosage was also increased to 10 minims (0.6 cc.) three times daily. The addition of yeast tablets to the diet and the increase in amino acid intake through daily feedings of gelatin have also brought a more rapid response for the better. At present the oil is administered in a mixture with liquid vitamin B complex, with which it forms an imperfect emulsion, simulating in taste malt and cod liver oil mixtures. Each gram of the oil is standardized to contain 2 Evans-Burr units of vitamin E, and the usual dosage is 4 cc. from three to four times daily, of one to seven parts suspension of wheat germ oil in vitamin B mixture. The patient thus receives about 2 cc. daily of wheat germ oil, together with an ample supply of the vitamin B complex.

The response to treatment is usually prompt. At first improvement in appetite is noted, then disappearance of pain on exertion, followed by greater resistance to fatigue and lastly by replacement of rubbery muscles by normal muscle tissue. Rise in growth and weight was noted in all the younger patients, and also an increase in the sense of well-being. The medication in the present form is usually well tolerated by all patients.

In cases of muscular dystrophy of long standing with contractures and deformities, the concentration of the oil in the mixture has been increased, the patient thus receiving from 4 to 6 cc. of wheat germ oil daily. No unpleasant after-effects have been reported by the patients receiving this stronger mixture.

REPORT OF CASES

The first patient had pseudohypertrophic muscular dystrophy superimposed on Fröhlich's syndrome. He received antuitrin S subcutaneously and wheat germ oil orally. The improvement in the muscular dystrophy was rather spectacular, while response to the antuitrin S was slower but very definite.

CASE 1.—A boy aged 14 years, admitted for observation to the Balch Hospital in Manchester, N. H., through the Crippled Children's Clinic, April 18, 1939, was in good health till two and one-half years before admission, when difficulty in walking developed, and he complained of excessive fatigue, especially on going upstairs. He also had difficulty in getting up from a sitting position and for the last one and one-half years had been completely bed ridden and chair ridden, entirely unable to help himself. He also developed contractures of both legs from being kept tied in a chair in the daytime. His past history was noncontributory. Delivery was normal and he was breast fed as a child. He also had all childhood diseases without sequelae. As a young boy he tended to be rather obese. No family history of muscular dystrophy was obtained.

The patient was very obese and was unable to move any part of his body except for raising his head and slight movement of his toes. He had a cherubic facial expression, with an obese body and fat mainly distributed over the abdomen, breasts, shoulders, arms, thighs and legs. A large apron of skin and fat over the lower part of the abdomen covered an infantile penis. The testicles were very small. The fingers were tapering, with the proximal phalanges padded with fat. The cranium and cranial nerves were normal. No sensory changes were found. Deep reflexes were not elicited.

The generalized muscular weakness and the displacement of muscles by fat suggested the diagnosis of pseudohypertrophic muscular dystrophy in a patient with Fröhlich's syndrome. In the hospital, at first the patient was unable to feed himself and had to be turned over frequently as he was unable to change his own position. He was placed April 19 on antuitrin S., 200 units every other day, and thyroid extract, one-eighth grain (0.008 Gm.) twice daily. April 21 he was placed on proprietary capsules, containing 3 minims of wheat germ oil each, given three times daily. Three days later the dose was increased to 9 minims of the oil three times a day. Dried yeast tablets were also added to his diet. April 29 he was able to abduct his arms without assistance while in a lying position, some movement appeared in his fingers, and toe movements appeared normal. Both legs still appeared contracted at the knees, with the achilles tendon also contracted on the left.

On May 2 contractures of the legs appeared less marked. He was able to raise his arms and hands by climbing up on his face while in a semisitting position, was able to turn over without assistance, and the finger tips appeared less tapering because of loss of fat around the proximal phalanges. May 6 he was able to abduct his arms; the deltoid contractions were definitely palpable; the finger grip was much stronger; the contractures of the legs nearly disappeared, with the assistance of daily stretching and local massage. Fat around the abdomen also shrank down, and the patient's face appeared less full. As the family moved out of the state, he had to leave the hospital. When last heard from, he continued to gain while taking wheat germ oil and yeast tablets daily.

Case 1 is of especial interest because of the rapid return of strength after the patient began to receive the wheat germ oil. There were no ill effects from the oil and I felt that the addition of yeast tablets to the oil increased its potency.

CASE 2.—A boy aged 2½ years was first seen May 15, 1939, at the Balch Hospital in Manchester, N. H., through the New Hampshire Crippled Children's Clinics. When he first began to walk, at the age of 1 year, his mother noted that he had difficulty in getting up from a sitting position and would rise on himself. Also contractures of the tendons of the toes developed on both feet.

The family history was noncontributory on the paternal side. On the maternal side, two great-uncles were crippled and one died at the age of 14 in England from a crippling condition which probably was a muscular dystrophy. Four maternal uncles had a condition similar to that of the patient, one of them dying from it at the age of 13 and the others being considerably crippled as a result of this infirmity.

When examined, the patient appeared normal in size but definitely overweight. He walked with a waddling gait and there was some lordosis of the lumbar spine. He had considerable difficulty in going upstairs and would get up from a sitting position in a definitely dystrophic manner by rising on himself. The muscles of the shoulder girdle were weak and the gastrocnemii hypertrophied, with a rubbery feeling to them. Deep reflexes were not elicited.

He was placed on wheat germ oil 7 drops three times daily. When seen on July 18 some slight improvement was noted in his getting up from a sitting position, although he still showed considerable weakness of the shoulder girdle muscle as evidenced by his falling through when being lifted by his elbows. He was then placed on a mixture of wheat germ oil and vitamin B complex, 1 ounce of the oil to 7 ounces of vitamin B

complex, in teaspoon doses three times daily. A recheck one month later showed him able to get up without rising on himself, the muscles had lost their rubbery feeling and he could be raised from the floor without falling through. According to the mother he is able to play more and walk up and down stairs without becoming fatigued. He has continued to gain on the same medication and is nearly normal in strength at present.

The next patient is an uncle to patient 2. Two uncles and three brothers had a similar disorder. It has been transmitted through the maternal side, with no female members of the family involved.

CASE 3.—A boy aged 8 years, first examined March 28, 1939, had been having difficulty in getting up from a sitting position and had been stumbling and falling frequently on walking.

His birth was normal. He walked at 11 months. He had anterior poliomyelitis at the age of 1 year, which left the right leg atrophied and weak.

The boy walked with a markedly waddling and unsteady gait. There was advanced atrophy of the muscles of the shoulder girdle, thorax and spine and hypertrophy of the gastrocnemius and soleus on the left with a rubbery feeling to the muscles. The left leg muscles were atrophied as a result of old poliomyelitis. The muscle strength, however, was much greater in the atrophied leg, indicating that possibly the previous attack of poliomyelitis had prevented the dystrophy involving the right leg. There was marked lordosis of the lumbar spine, and both glutei were hypertrophied and replaced by fat. There was generalized absence of deep and superficial reflexes.

Treatment with aminoacetic acid and a high gelatin intake for two months produced no change in his condition. May 4 he was placed on wheat germ oil 10 drops three times daily. He received the medication for three months and a definite gain was noted in his condition, in that he was better able to get up, complained of less pain on walking and exhibited some increase in muscle power. In January 1940 he was placed on a mixture of wheat germ oil and vitamin B complex and since then there has been more increase in muscle strength and the muscles of the legs have appeared less rubbery.

Case 3 is of interest because of the moderate improvement on wheat germ oil alone and marked and more rapid improvement when a mixture of vitamin B complex and wheat germ oil was administered simultaneously. The rare coincidence of muscular dystrophy and anterior poliomyelitis was also somewhat confusing diagnostically, for the paralyzed leg appeared much stronger and entirely unaffected by the dystrophy while the other leg was of much larger circumference but with rubbery and dystrophic musculature. The response to treatment was also rapid and became apparent within a few weeks.

CASE 4.—A boy aged 14 years was seen at the Crippled Children's Clinic at the Balch Hospital on Aug. 1, 1939. For two years his mother had noted that he was losing strength in his arms and that he was unable to abduct them as well as he could previously. The scapulas would stand away from the chest wall when he tried to lift his arms.

The patient had a somewhat expressionless facies, flattening of the nasolabial folds, atrophy of the buccinators and masseters and marked hypertrophy of the upper and lower lips, which were pendulous and gave the face a grotesque appearance. There was atrophy of the trapezii, rhomboids and serrati, with the scapulas winging away from the chest wall; the latissimus dorsi and pectorals were involved. Elevation of the arms was limited to 100 degrees. On an attempt to raise the arm the entire shoulder girdle moved forward.

The patient's past history was noncontributory. The family history is of significance in that one aunt has the same type of dystrophy as the patient except for absence of lip hypertrophy, but with marked involvement of muscles of the spine and lower extremities.

The patient was placed at first on aminoacetic acid and an increased gelatin intake of 2 pounds (0.9 Kg.) a month, and also thiamin chloride from 10 to 15 mg. at weekly intervals for six weeks, without change in his condition. On September 15 he was placed on wheat germ oil, 10 minims three times daily. A slight improvement was noted in that the muscles appeared less rubbery, but he was still unable to raise his arms satisfactorily. In December he was changed to a mixture of wheat germ oil and vitamin B complex, and since then his gain has been more rapid. The rhomboids are functioning more adequately now, and winging of the scapulas is less prominent. He is able to abduct his arms better and does not fall through when lifted by his elbows. The face is also fuller and the grotesque facial appearance less apparent. The hypertrophy of the lips, however, has remained unchanged.

The case of Landouzy-Dejerine's type of paralysis just described is of interest because of the rather uncommon association of marked hypertrophy of the lips with atrophy of muscles of the face. The patient responded well to treatment with wheat germ oil and vitamin B, while no improvement was obtained with thiamin chloride and gelatin and less change for the better with wheat germ oil given alone.

CASE 5.—A boy aged 8 years was seen for the first time Jan. 1, 1939, because of stumbling while walking, pain in the lower extremities on going upstairs, and spinal deformity. His birth was normal. His early life was uneventful except for a fall from a crib at the age of 1 year.

The patient is one of three siblings and there is no history of muscular disturbances in any other members of the family.

Physical characteristics included light soft hair and very light complexion, short fingers and spade shaped hands. The gait was unsteady and waddling. He got up from a sitting position by rising on himself and fell through when lifted by his elbows. Generalized muscular atrophy involved muscles of the shoulder girdle, the biceps and the triceps. There was greatly accentuated lumbar lordosis, with protuberant abdomen as a result of weakness of the abdominal muscles. The gluteal muscles were slightly hypertrophied, and so were the gastrocnemii, with a rubbery consistency. The feet were pronated. There was marked angioneurotic edema. No sensory changes were noted. The vibration sense and coordination were normal. Deep and superficial reflexes were present and within normal limits.

A diagnosis of pseudohypertrophic muscular dystrophy was made and the patient was placed on aminoacetic acid orally 15 Gm. daily, increased gelatin intake, thyroid one-eighth grain twice daily, and thiamin chloride 3 mg. daily. There was no improvement in his condition under this medication. In November the patient was placed on a mixture of wheat germ oil and vitamin B complex, a teaspoon three times daily. Within two weeks a definite change for the better was noted. The pain in walking disappeared and the muscles gradually began to lose their rubbery consistency. When rechecked on Jan. 17, 1940, he was able to get up without rising on himself, he could be lifted up by his elbows without falling through, and he was able to walk up and down stairs without complaining of pain. The muscles also had a normal tonus.

Case 5 is of interest because of the failure to improve under large doses of aminoacetic acid and the spectacular change for the better with vitamin E and vitamin B complex therapy.

CASE 6.—A girl aged 14 years, seen at the Manchester Crippled Children's Clinic Sept. 28, 1939, complained of difficulty in walking, weakness and inability to close the hands, wrist drop, muscular weakness and easy fatigability. She was apparently well till May 1939, when there developed a flaccid paralysis of all four extremities, which continued for about a month. She had no sensory changes and no bladder disturbances at the time. She was hospitalized for several months and received large doses of thiamin chloride intravenously. This brought some return of function, and in August she was able to be up and around. At the time of leaving the hospital she had bilateral foot drop and wrist drop, generalized advanced muscular atrophy, especially involving the small muscles of the hands and feet, and weakness of the flexors of the fingers and the shoulder girdle muscles. She also had some slight ankylosis

of the joints of the wrists and ankles. A diagnosis of multiple neuritis or neuromyeloradiculitis was made at the hospital.

The patient was rather emaciated and walked with a pronounced steppage gait. Positive observations included advanced generalized muscular atrophy, bilateral foot drop and wrist drop, and inability to close the hands or abduct the arms. There was considerable tenderness on compression over the muscles of the lower extremities. No definite sensory changes were noted; the vibration sense was reduced to one eighth normal; there was general areflexia.

Fever therapy and vitamin B complex given orally in teaspoon doses three times daily brought improvement in appetite, relieved the muscle tenderness and made walking easier and possibly also influenced muscle strength for the better. There was no appreciable change in the muscular atrophy, however. December 7 she was placed on wheat germ oil and vitamin B mixture in a proportion of 1:8, in teaspoon doses three times daily. She rapidly responded to the change in medication. She felt stronger physically, gained weight and was able to do more without becoming exhausted. Regeneration of the atrophied musculature also became apparent at the end of one month. Two months later the hand grip had nearly returned to normal and the atrophy of the interossei has become much less prominent. The foot drop, the steppage gait and the wrist drop have nearly disappeared.

Case 6 is of interest because of the improvement in the neuritic symptoms on vitamin B complex therapy, but without rapid change for the better in the muscle atrophy. The addition of the wheat germ oil acted apparently as a stimulus to muscle regeneration, with the concomitant return in muscle bulk and strength.

Case 7.—A girl aged 9 years, first seen on Oct. 25, 1939, complained of difficulty in walking because of weakness of both legs, pain in the lower extremities on exertion, and some muscle atrophy in both thighs. The present condition came on after an attack of anterior poliomyelitis in August 1939, which produced involvement of both lower extremities and necessitated bed rest for a number of weeks.

The patient was slightly obese. She walked with an unsteady gait and was unable to stand up alone unless supported. She was unable to rise from a lying to a sitting position without assistance. There were bilateral atrophy and weakness of the gluteal, iliopsoas and quadriceps muscles. The circumference of the left leg and thigh was 1 inch greater than on the right. The abdominal muscles were weak and flabby. Flexion of the right thigh was 20 degrees and of the left 40 degrees. Leg extension on the thigh was reduced on the right to 30 degrees and on the left to 40 degrees. There was tenderness on slight compression of the muscles of the lower extremities. No sensory changes were noted. There was bilateral absence of the ankle jerks; the knee jerk was not elicited on the right and was very sluggish on the left.

On vitamin B complex the patient showed definite gain in that pain completely disappeared. She was able to walk without support, and extension of the leg and flexion of the thigh also improved. The muscle atrophy, however, had not changed appreciably.

In December she was placed on wheat germ oil and vitamin B mixture. The response was very satisfactory. One month later muscle function had nearly returned to normal, the limp had also greatly improved and the evidence of muscle atrophy was not discernible any longer. As far as can be determined this patient has escaped any serious after-effects from the attack of poliomyelitis which she had in August 1939.

COMMENT

The substance (or substances) found in wheat germ oil, at present designated as vitamin E, is probably akin in nature to the vitamin B complex and is composed of many factors, each having its own sphere of influence on the processes of growth and metabolism. The ability of the organism to utilize what it needs and discard the excess as unnecessary substances explains why so many pathologic conditions are relieved by the administration of all the factors in a certain vitamin, even if some of the factors are not actually needed. After further analysis of the essential therapeutic properties of the vitamin complex it will be possible to prescribe the individual factor required to cure a certain deficiency state. In the meanwhile, however, till this stage of knowledge is gained, the use of the entire vitamin complex should not be considered superfluous.

The exact part played by vitamin E in the process of proteolysis and its influence on muscle metabolism has not been fully determined yet. Meldolesi's [7] assumption that insufficiency of proteolytic enzymes in the blood was the cause of muscular dystrophy is given added weight by Shute's [8] observation of antiproteolytic substances in the blood serum of patients with abruptio placentae and threatened abortion. The fact that both the dystrophies and the states of threatened abortion are relieved by administration of wheat germ oil (vitamin E) would imply the possibility that in both instances the activity of the vitamin is inhibitory to the antiproteolytic substances in the blood serum which by their activity interfere with normal metabolism of protein and its transformation into normal muscle tissue.

Vitamin E probably acts also as a stimulus to cell proliferation in muscle cells in the same manner as it acts on the testes of experimental animals.[9] The rapid regeneration of atrophied muscle was especially evident in cases 6 and 7, in which considerable muscle atrophy occurred following polyneuritis and anterior poliomyelitis, but with rapid return to normal after administration of vitamin E. In this way it differs from vitamin B, which is primarily concerned with nervous tissue metabolism, and this would explain the slow muscle regeneration which occurred in patients 6 and 7 while they were receiving vitamin B complex alone.

The relationship of the vitamin E complex to the endocrine system offers a field for fruitful investigation. The more than accidental concurrence of muscular dystrophy with Fröhlich's syndrome or other endocrine disturbances brings up the relationship of some constituents of the vitamin E complex to cells in the hypothalamus and the pituitary body controlling gonadal function and fat metabolism. The connection of sterility with muscular dystrophy as seen in dystrophia myotonica assumes new significance in view of Shute's [10] report of treating successfully certain cases of sexual maldevelopment with vitamin E. It would especially deserve a therapeutic trial in dystrophia myotonica because of involvement in such patients of both the muscular system and the gonads. Although muscular dystrophies are more common in the male and most often transmitted through the female, there is a possibility that a number of pathologic disturbances in women which are at present ascribed to other causes are actually the result of vitamin E deficiency.

The administration of wheat germ oil as a prophylactic measure to pregnant mothers of dystrophic families also deserves a clinical trial. In the past birth control or sterilization was the only solution. It should also be given a therapeutic trial in cases of muscle atrophy secondary to damage to the anterior horns of the cord or peripheral nerves, namely multiple neuritis,

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anterior poliomyelitis with muscle atrophy, amyotrophic lateral sclerosis, and progressive muscular atrophy. The combination with the antineuritic vitamin B complex should increase its therapeutic value in such cases.

SUMMARY AND CONCLUSIONS

Five patients with muscular dystrophy, one patient with muscular atrophy following anterior poliomyelitis, and one patient with muscle atrophy after an attack of multiple neuritis or neuromyeloradiculitis were treated with vitamin E (wheat germ oil).

Definite improvement was obtained in all cases with muscular dystrophy, the improvement being manifested in gain in muscle strength, the disappearance of fatigue and muscle pain on slight exertion, change in muscle texture, and displacement of dystrophic musculature by normally contracting muscle tissue.

In the cases of muscular atrophy following involvement of the nervous system, increase in amount of regeneration of muscle tissue became apparent after the addition of vitamin E (wheat germ oil) to the vitamin B complex the patients were receiving.

The addition of vitamin B complex to vitamin E appeared to increase the therapeutic efficaciousness of the latter.

There is need for further clinical investigation of the potentialities of vitamin E in the treatment of muscular atrophies and dystrophies.

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THE ROLE OF VITAMIN B_1 IN DELIRIUM TREMENS

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Vitamin B_1 has been used in the treatment of peripheral neuritis of alcoholic origin with encouraging results. Prior to the recognition of the role played by vitamins, polyneuritis in the alcohol addict was usually attributed to the direct toxic action of alcohol. Since Shattuck [1] in 1928 first called attention to the occurrence of beriberi in persons with chronic alcoholism, syphilis, carcinoma and chronic debilitating diseases, the term "alcoholic polyneuritis" has been gradually discarded in favor of a more inclusive and general conception.

Since the work of Shattuck, Wechsler [2] and Minot and his associates [3] have pointed out that avitaminosis probably plays an important role in the production of this type of polyneuritis. Goodhart and Jolliffe [4] reached the conclusions that (*a*) vitamin B_1 deficiency is the primary cause in the alcohol addict, and (*b*) improvement in the objective signs of polyneuritis of this form varies directly with the vitamin B_1 intake up to the point of optimum dosage.

It is notoriously true that many chronic alcohol addicts consume an irregular and inadequate diet and consequently the total intake of vitamin B_1 is insufficient. In addition, Ornsteen [5] points out that, even though the chronic alcohol addict may ingest a sufficient amount of vitamin B_1 for his caloric intake in the form of food, each calory received in the form of alcohol decreases the total intake of vitamin B_1 and increases the requirements. Thus, regardless of food intake, the chronic alcohol addict has an inadequate vitamin consumption. According to New and Nonofficial Remedies,[6] 200 international units of vitamin B_1 is needed in the daily requirements. Cowgill [7] states that according to his formula, on an average, an individual weighing 75 Kg. (154 pounds) needs 280 international units a day. Bowman and his co-workers [8] have made the valuable suggestions that the factors contributing to delirium tremens are "infections, lowered chloride content of the blood, lowered vitamin reserves, increased lactic acid in the blood and psychogenic factors." Cline and Coleman,[9] in a review of the etiology of delirium tremens, have given various other contributors' points of view, one stating that delirium tremens has never occurred except when alcohol has been abruptly withdrawn. We are likewise convinced that this is an erroneous assumption because of observations in our two series.

It is our contention that the cause of delirium tremens is essentially a vitamin B_1 deficiency which has been brought on by sudden deficits in the maintenance requirements. Inadequate, irregular and at times total abstinence of diet is practically universal in acute delirium tremens. The person so affected usually does not stop for adequate dietary foods in his alcoholic meanderings after the first twelve hours. This point has been closely checked in each patient's history presented in this series.

Approximately 90 per cent of all patients with acute alcoholism admitted to this service have complained on entrance of nausea and symptoms of gastritis, stating in a universal language "Take it away! The sight of food makes me sick!" Anorexia itself has been established by many other investigators as a result of deprivation of adequate vitamin B_1. Russell [10] has reported three cases in which, after a single subcutaneous injection of 400 international units of crystalline vitamin B_1, the patients' appetites have returned within twenty-four hours "to such an extent that it was difficult to satisfy their desire for food." In our series of cases it was found that the persons receiving intravenous vitamin B_1 had regained the desire to eat within twenty-four hours while those not receiving this treatment took approximately twelve to eighteen hours longer.

Alcohol in small amounts may cause an increase in appetite, but when it is taken in large quantities over a prolonged period the appetite is lost. This lack or loss of appetite results in a relative food loss with attending vitamin B_1 deficiency and later may result in peripheral and central (cerebral) neuronitis.

It is felt that the delirium tremens is an irritative stage of the central (cerebral) neuronitis having its mechanism of function as a disturbance in the relation-

From the Charles V. Chapin Hospital.
The intravenous vitamin B_1 (Betaxin) was furnished by the Research Department of the Winthrop Chemical Company, Inc.

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ship of a deranged carbohydrate and vitamin B_1 metabolism. This irritative phenomenon can and does occur many times in an alcoholic individual before a permanent neuron destruction occurs, as is later shown in the symptoms and other features of Korsakow's syndrome and in the absent knee jerks of far advanced peripheral neuritis of this origin. It is conversely true that many alcoholic patients, including those having had many bouts of delirium tremens, do not develop Korsakow's syndrome or peripheral neuritis. For this fact an explanation is offered that individual variations in vitamin B_1 consumption and absorption do exist as well as ability to consume alcohol, some of which may not be of the best brand.

In this paper we present ten cases of delirium tremens treated at the Charles V. Chapin Hospital in the past year. All patients were selected by a standard insisting that (*a*) vivid hallucinations of alcoholic origin must have existed at the time of entry; (*b*) a history of periodic overindulgence in alcohol and inadequate food consumption was given, and (*c*) a consumption of alcohol in some form had continued up to the time of hospital entry. Except for hallucinations, acute toxic symptoms, generalized tremor and roughness of the skin, all patients were in satisfactory physical condition, unless it is specifically stated otherwise. Five of them were treated with various amounts of intravenous vitamin B_1 and whisky, while the remaining five were used as controls with symptomatic therapy and with no unusual emphasis on vitamin intake.

Summary of Case Reports

Case No.	Hospital Days During Delirium Tremens	Total Hospital Days	Weight, Lb. On Admission	Weight, Lb. On Discharge	Gain or Loss	Total Intravenous Mg. of Vitamin B_1	Total International Units*
Alcohol and Vitamin B_1 Cases							
1	3	6	146	154	+ 8	200	67,570
2	3	15	188	191	+ 3	525	175,620
3	3	4	180	182¼	+ 2¼	150	52,695
4	2	4	168	163	− 5	150	50,695
5	1	6	140	158	+18	100	35,341
Aver.	2.4	7	164.4	169.7	+ 5.4	225	81,480†
Control Cases							
6	3	5	144¼	153	+ 8¼	30	3,964‡
7	8	20	125	134	+ 9	..	1,672
8	4	20	152	153	+ 1	..	2,770
9	4	9	150	156	+ 6	..	836
10	2	13§	134	140	+ 6	..	418
Aver.	4.2	13§	141.1	147.2	+ 6.1	6.0	528‡

* Includes supplemental vitamin B_1 (yeast and cod liver oil) and excludes diet.

† Designates average number of international units per person per hospital day exclusive of diet.

‡ Includes diet and supplemental B_1.

§ Patient 10 still in the hospital.

‡ Designates average number of international units per person per hospital day with diet.

The method of treatment used in these five cases was as follows:

1. Four ounces (120 cc.) of bonded rye whisky was given every three hours commencing on admission so that there would be no time during which the patient was not receiving alcohol. The whisky was given to prove that the intake of alcohol was not responsible for the patient's delirium tremens.

2. Synthetic crystalline vitamin B_1 was given intravenously (50 mg. or more) in a period of twenty-four hours.

3. Daily ward diets containing at least 209 international units of vitamin B_1 and supplementary vitamin B_1 in the form of yeast and vitamin capsules were given in some cases to insure adequate vitamin content.

4. Routine nursing care was given, keeping the patient clean, preventing injury, assuring food intake and caring for excretory functions and the forcing of fluids.

5. Each patient was weighed on entry and at discharge.

In the five control cases:

1. No whisky was given.

2. Intravenous vitamin B_1 was not given except to patient 6, who received only 30 mg.

3. The same ward diet was followed with supplementary vitamin B_1 to insure that at least the ordinary daily requirements were met.

4. The identical consideration and nursing care were administered.

5. Each patient was weighed at entry and at discharge.

The five patients who received whisky and intravenous vitamin B_1 showed an almost immediate improvement in the physical and mental status. The generalized dehydration and some roughness of skin, which were noticed on entry, cleared within twenty-four to thirty-six hours after admission. Also the patients were still receiving a minimum of 32 ounces (950 cc.) of whisky every twenty-four hours. The visual hallucinations and fear reactions likewise were noticeably lessened and generally nonexistent within thirty-six hours. Restlessness, agitation and generalized motor activity, so frequently seen in delirium tremens, subsided so that continuous baths or chemical restraints were only rarely necessary in these cases.

In the five control cases the duration of time for the symptoms to clear was relatively longer and patient 7 was eight days in a state of acute delirium.

As will be seen in the table, the control patients had an average of 4.2 days before recovery, while the five patients receiving whisky and intravenous vitamin B_1 had an average of 2.4 days. It is interesting to note that a more rapid recovery time is to be expected when concentrated doses of vitamin B_1 are given intravenously. The total number of hospital days of the first series was half that of the control group. It is also observed that the weight gain was more in the control group than in the treated group. The explanation offered for this is that the control group spent considerably more time in the hospital, availing themselves of a continued balanced vitamin diet. It will be seen by examining the total milligram amount and the total international unit amount in both series that the original group received on an average per person daily 74.9 times more international units than the daily need required. The control group in their diets received an adequate daily requirement consisting of 528 international units, which is practically double the minimum amount (154 pounds [70 Kg.] requires 280 international units†).

The following report is a brief summary of each of the ten cases under consideration:

REPORT OF CASES

CASE 1.—An unmarried laborer aged 42, weighing 146 pounds (66 Kg.), was admitted to the psychiatric ward for the third time on Dec. 8, 1938. According to the admission paper he was extremely nervous, was profane and suffered delusions of persecution and homicidal tendencies. The cause of his symptoms was alcoholism.

On admission the patient was in good general physical health. There was a strong odor of alcohol on his breath and he was tremulous, being unable to stand without support. A heavy trace of albumin and many white blood cells were found in the urine. The blood nonprotein nitrogen was 50 mg. per hundred cubic centimeters and the blood creatinine was 1.5 mg. per hundred cubic centimeters. The icteric index was 5.

On mental examination he vividly described visual hallucinations, remarking "I got delirious tremens." What do you see? "Pink elephants, brown elephants, polar bears, Rhode Island reds, alligators—if I was to tell you, I would say the whole Barnum and Bailey outfit—every animal he has got." Have you ever been delirious before? "Yes, twice." He was oriented as to time, place and person and recognized several staff members whom he had seen before.

The social history indicated prolonged and excessive indulgence in alcohol of all grades.

Treatment consisted of 4 ounces of whisky every three hours, 25 mg. of vitamin B_1 given intravenously twice a day and a high caloric diet.

On the second hospital day urinalysis was practically negative, and on the fourth day it was completely negative. Several later examinations were also reported as negative. The blood nonprotein nitrogen was 43 mg. and the blood creatinine was normal at the end of the second hospital day.

The night of admission 3 grains (0.2 Gm.) of pentobarbital sodium was given twice because of extreme restlessness and he later had to be awakened to receive the prescribed doses of whisky. The following day he was cooperative but still tremulous and showed marked unsteadiness of gait. He mumbled considerably to himself and perspired freely. General improvement marked the third hospital day. The tremor was lessened and his general well-being was commented on by the patient himself. The whisky was increased to 4 ounces every two hours and discontinued late that same night. The vitamin B_1 was discontinued at the end of the fourth hospital day.

The patient was discharged on the sixth hospital day free from all hallucinations and left with a sense of well-being and with a weight gain of 8 pounds (3.6 Kg.).

CASE 2.—An unmarried factory worker aged 24, weighing 188 pounds (85 Kg.), was admitted for the first time to the psychiatric service because of visual hallucinations and a generalized convulsive attack which took place as he was taking a bath. There was a history of drinking for the past two years but of no previous hallucinations.

On admission the patient was in good general physical condition except for a heavy trace of albumin and rare granular casts in the urine; the temperature was 101.8 F. rectally and the pulse rate 150 with normal blood chemistry.

Mental examination revealed definite ideas of reference and paranoid delusions. "People are hiding in this room. They're trying to do me up. My people have all poisoned themselves." Visual and auditory hallucinations were clearly demonstrated in the patient's actions. He declared emphatically that he could see trees in the room and that lampposts were walking around and spitting at him. He complained bitterly that soldiers were marching up and down in the halls and when passing his room would try to fire on him. On one occasion while looking out of the window the patient suddenly began to cry, saying "there's a little boy out on the lawn with both legs cut off and nobody is around to help him." Generalized excitement was so prominent at that time that it was necessary to isolate the patient completely.

Treatment was instituted immediately after entry. He received the customary 4 ounces of whisky every three hours and 175 mg. of vitamin B_1 intravenously, which was given in split doses, each split dose being given at the height of each of four excitement periods. The next day his temperature was normal but tachycardia with a rate varying from 100 to 140 persisted. The same amount of whisky and vitamin B_1 was given. The patient's general excitement started to subside, and on the third day the temperature and pulse were normal. The urine was completely normal, and at the end of the third day all mental symptoms were nonexistent. This terminated the active treatment.

Of special interest in this case was the fact that no chemical restraint of any kind was used during the acute stage of excitement. Vitamin B_1 was repeated in small doses at the height of the excitement. Physical and mental recovery progressed as rapidly as if sedative drugs had been used in the routine manner.

The patient was discharged on the fifteenth hospital day, weighing 191 pounds (87 Kg.).

CASE 3.—An unmarried Irish-American office worker aged 33, weighing 180 pounds (82 Kg.), was admitted to the psychiatric ward for the first time, the admission paper remarking that the patient had hallucinations and thought men were chasing him and that he was destructive, the present symptoms being due to excessive indulgence in alcohol.

On admission his general physical status was good. The urine and blood were essentially normal. Mentally he showed marked evasiveness when questioned about his imaginations, remarking "They're all right. I told the doctor I had them but I didn't. I told him I had a lot of things. I heard cracks all about myself. I had the 'shakes' all right. The doctor asked me if I saw anything but I told him I hadn't seen anything but I heard a lot of things. People were talking about me; everybody's been ribbing me. They said I was a crook and a murderer." Observation in the ward revealed that he was communicating with some one by Morse code and at other times would gesticulate and stare as if he were carrying on active hallucinatory experiences; however, when asked about these he emphatically denied hearing voices or seeing visions. It was interesting to note that he would repeatedly ask attendants and nurses if they were calling him.

The social history disclosed that he started to drink beer in college because a doctor told him it would relax his nerves. This gradually became a habit with him and at the time of entry he was drinking anything he could obtain. There was no history of previous alcoholic psychoses.

Treatment consisted of the usual 4 ounces of whisky every three hours, 25 mg. of vitamin B_1 intravenously twice a day and the house diet.

Active mental symptoms continued for two days and nights. On the second night he was very resentful and irritable, almost refusing to take the prescribed amount of whisky and answering the nurses' requests with "What the h—— do you fellows intend to do to me? Have I got to take this stuff and see things again tonight?" The mental symptoms appeared to clear completely overnight and he was discharged on the fourth hospital day. The whisky and vitamin B_1 had been prescribed for three days and two nights. At the time of discharge there was a weight gain of 2½ pounds (1 Kg.).

CASE 4.—An unmarried Irish-American gas station attendant aged 31, weighing 168 pounds (76 Kg.), was admitted to the psychiatric ward for the first time, the admission paper stating that he had been having hallucinations due to excessive indulgence in alcohol.

Physical examination was essentially negative except for a pulse of 110 and a generalized tremor. The laboratory data were normal. Mentally he was cooperative but complained of seeing rats chewing paper on the floor in his room, men walking on the walls and strange animals walking around his room and going in and out of the window. He was expansive at times and remarked "I saw the World War reenacted today in Fall River. Fifty thousand people were shot down and even the women were fighting." He was confused and disoriented. There was a history of steady drinking for the previous two years.

The treatment of whisky was started and 25 mg. of vitamin B_1 was given intravenously twice a day with the regular house diet. In addition at least 40 ounces (1.2 liters) of fruit juices and six tablets of brewers' yeast were given.

On the second hospital day he was correctly oriented, very cooperative and remarked that he had gotten over the "horrors" and was not seeing anything. The third day he appeared intoxicated and remarked "I had $2.50 when I entered the hospital and the guys around here must have rolled me for it." In a few hours he had lost this paranoid reference and said no more about it. He was completely oriented in the evening of this same day and all medication was stopped. Although his appetite was excellent the patient had lost 5 pounds (2.3 Kg.). On the following day he was discharged.

CASE 5.—A white man aged 49, divorced, weighing 140 pounds (64 Kg.), was admitted to the psychiatric ward for the first time on Aug. 28, 1939, for the treatment of delirium tremens. On

admission he was markedly restless, impulsive and unpredictable and had to be restrained. He was actively hallucinating and disoriented with rambling, disconnected speech and complained bitterly of bugs crawling over his body and in his ears.

Physical examination revealed nothing remarkable except that both ears were discharging some semipurulent material, a condition which was later diagnosed as chronic nonsuppurative otitis media. Laboratory data were essentially normal.

The social history revealed heavy indulgence in liquor for the previous eight years, the patient at times drinking as much as a quart daily. No previous history of auditory or visual hallucinations was obtained.

Treatment consisted of whisky, 4 ounces every three hours, and 50 mg. of vitamin B_1 given intravenously twice a day. Within twenty-four hours the active mental symptoms had subsided. Whisky and vitamin B_1 were then discontinued after his having received 100 mg. The only complaint registered was pain in the arms.

On the third day all symptoms of an alcoholic nature had subsided completely. The usual tremor and unsteady gait had disappeared and he seemed very grateful for having "come through the horrors." He was discharged on the sixth hospital day and was referred to the ear clinic for treatment of his otitis media. The weight gain was 18 pounds (8 Kg.).

REPORT OF CONTROL CASES

In the control series we have a group of five cases of delirium tremens in which routine symptomatic therapy was given as previously described:

CASE 6.—A white man aged 43, married, weighing 144½ pounds (66 Kg.), had been drinking periodically for years and heavily for four days before entry. On the physical examination hypertension with blood pressure of 160 systolic, 90 diastolic, was noted. The blood Wassermann reaction was reported 4 plus. The spinal fluid Wassermann reaction was negative. The patient manifested typical visual and auditory hallucinations and delusions of persecution. He received 10 mg. of vitamin B_1 intravenously daily, and recovery from his alcoholic illness was noted in three days.

CASE 7.—A man aged 32, unmarried, weighing 125 pounds (57 Kg.), had been drinking for two years and gave a history of delirium tremens once in the past. Physical and laboratory examinations were essentially negative. Mentally he manifested the usual visual and auditory hallucinations, some buzzing in the ears, delusions of homosexuality and marked preoccupation and seclusiveness. Treatment consisted of the ward diet, and strict attention was paid to his seclusiveness. He recovered in eight days. The weight on discharge was 134 pounds (61 Kg.).

CASE 8.—A white man aged 32, unmarried, weighing 152 pounds (69 Kg.), had been drinking for three years. On entrance he had a mild hemolytic streptococcus sore throat with a temperature of 103 F. This persisted for thirty-six hours with a pulse of 130, after which the temperature and pulse became normal. Respirations were labored; his face was flushed, the finger tips cyanotic. These signs persisted for forty-eight hours. The sight of food appeared to distress him and he complained vigorously of a very poor appetite. In addition to the ward diet he received two tablets of brewers' yeast three times a day. He recovered from his delirium tremens in four days. The throat culture was negative in four days and on discharge (on the twentieth day) he weighed 153 pounds (69 Kg.).

CASE 9.—A white man aged 42, divorced, weighing 150 pounds (68 Kg.), gave a history of drinking for twenty years with exacerbations of delirium tremens on many occasions. Physical examination and the usual laboratory tests were negative. He was placed on a ward diet and recovered in four days. The weight at the time of discharge was 156 pounds (71 Kg.).

CASE 10.—A white man aged 53, divorced, weighing 134 pounds (61 Kg.), was admitted for the second time. There was a history of drinking for many years; on the previous admission to this hospital for delirium tremens he had recovered in three days. On this admission he had all the cardinal symptoms of delirium tremens and in addition thought he was a rain maker, calling on God to make it rain. His overactivity and symptoms of hypomania made him a nuisance and he was kept in strict isolation. On ward routine he recovered in two days. After eleven days he weighed 140 pounds (64 Kg.).

COMMENT

In cases 1 and 2 the presence of albumin and hyaline casts was noted. Both patients received whisky and intravenous vitamin B_1 treatment. Yet within seventy-two hours the urine was negative for albumin and casts. Rechecks at the time of dismissal substantiated these observations. Apparently when vitamin B_1 is given, whisky in large amounts does not continue to be a kidney irritant. It is felt that the vitamin B_1 acted directly on the kidneys in a therapeutic way along with routine hydration.

It was not possible to measure vitamin B_1 excretions through the kidneys during this study. Although the patients receiving the intravenous vitamin B_1 had been receiving on an average about seventy-five times the daily requirements during their acute illness, an assumption of how much was utilized by the brain and other structures cannot be ventured except to say that at least a small percentage appeared to be of help. The rapidity with which symptoms cleared would substantiate this when the cases are compared.

Our primary purpose in this paper was to prove that alcohol is not the principal factor in the production of delirium tremens and that a deficit of vitamin B_1 content in the brain parenchyma is chiefly responsible. A central (cerebral) neuronitis, an irritative phenomenon, is caused by a perverted carbohydrate and vitamin B_1 relationship, which when treated with adequate vitamin B_1 responds more remarkably (as far as subsidence of symptoms is concerned) than do the peripheral states of polyneuritis of alcoholic origin.

The question may arise from this work as to whether the intravenous vitamin B_1 or the balanced vitamin diet is the essential part of the treatment. This diet was considered adequate and rich in all vitamins and on analysis over a period of a week averaged 209 international units of vitamin B_1 daily in a total of 2,250 Gm. of food.

Alcohol in the presence of large amounts of intravenous vitamin B_1 does not cause a continuation of the symptoms of delirium tremens. A supplementary observation was that, if adequate vitamin B_1 was given when alcohol was abruptly withdrawn (control cases), eventual recovery would also occur. The fact that recovery from acute symptoms occurred practically twice as fast when intravenous B_1 was given (even in the presence of continued drinking) would indicate an etiology of primary B_1 deficiency in the presence of a deranged carbohydrate metabolism.

Hepatic Lesions.—The liver has been aptly described by Mann as the "commissariat of the body." Its role in maintaining a constant supply of utilizable food materials for the body tissues requires the participation of hepatic activity in every phase of metabolism. The liver is, in addition, the site of many syntheses; it is also an organ of detoxication, secretion and excretion. From these considerations it would be logical to infer that disease of the liver would be revealed quite readily by impairment of some particular function or functions, and indeed it can be shown that hepatic lesions, if severe enough, are accompanied by disorders of glycogen synthesis and storage, fat and amino acid metabolism, secretion and excretion of bile and many other chemical and physical processes.—Bodansky, Meyer, and Bodansky, Oscar: Biochemistry of Disease, New York, Macmillan Company, 1940.

WEIL'S DISEASE (LEPTOSPIRA ICTERO-HAEMORRHAGIAE) IN HAWAII

ITS SERUM TREATMENT

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Twenty-eight years after the description by Weil in 1886 of a disease characterized by the four cardinal symptoms fever, muscle pains, hemorrhage and jaundice,[1] Inada and Ido in 1914 demonstrated a spirochete as the causative organism.[2] They also succeeded in curing this disease by serum therapy.[3]

According to Inada and Ido,[3] as soon as the condition has been diagnostically determined the serum treatment should be applied in order to obtain the best results, and a higher rate of recovery accompanies early serum injections. When the serum treatment is given within five days of the disease, recovery is almost certain. Within two to three hours after the treatment with 20 cc. of serum, the causal organism found in the blood almost vanishes.

During the past two decades, numerous cases have been reported in European and Japanese medical journals as mentioned,[4] but I have not been able to find reports on this serum treatment in Hawaii. Through one of my friends, I was given a chance to use the serum for Leptospira icterohaemorrhagiae in treating the disease here. This has encouraged me to report my cases.

The two following cases are examples of the disease with and without the serum treatment; ten other cases are also listed in the accompanying table.

CASE 1.—*History.*—T. O., a fisherman aged 47, was admitted to the Japanese Hospital in Honolulu Oct. 31, 1927. There had been no particular sign of trouble until early in the morning of October 27, when the patient suddenly suffered from a chill with headache, dizziness, anorexia, fever, prostration and especially muscular pain along his lower limbs which confined him to bed, as he was unable to walk.

Just seven days before the onset of this disease, in order to get some bait for fishing, he went into a creek and got his entire body wet. At that time he had a small wound on his left heel. His family history and past history were noncontributory except for a case of bronchial asthma in his early years.

Physical Examination.—On the fifth day of the disease, when he was admitted, the patient was muscular and possessed a well nourished constitution, yet he lay in bed passively. He suffered pain in moving the eyeballs. The conjunctival vessels were all intensively injected, and slight yellowish changes were seen on the bulbar conjunctiva. His skin was yellow and he was damp with perspiration. There were no exanthems or edema, but a few swellings caused by lymph glands appeared in the left inguinal region. The temperature was 98 F.; the pulse showed a frequency of from 120 to 130 per minute and was feeble but relatively larger, with an arrhythmia. The apex beat of the heart could not be perceived. By percussion the area of cardiac dulness was found to be enlarged a little to the left side, and on auscultation the heart sounds were very weak, murmuring and arrhythmic and showed embryocardia. The second pulmonic sound was strongly accentuated. The liver could be palpated two fingerbreadths below the costal margin in the median line and was distinctly tender, intensive pain being elicited by pressure. The spleen was also palpable yet not so tender. Albumin, diazo and bile reactions in the urine were positive, but Fehling, Wassermann, Kahn and Widal reactions were all negative. Leukocytes numbered 9,260, with polymorphonuclears 92 per cent, lymphocytes 2 per cent and myelocytes 6 per cent; erythrocytes numbered 32,000,000 and the hemoglobin content was 80 per cent.

Course.—On October 31, the fifth day of the disease, the patient's temperature was about 100 F., but he complained continuously of headache and prostration in spite of the subcutaneous injection of 1,000 cc. of physiologic solution of sodium chloride and all kinds of heart tonics.

A smear seen under the microscope proved that Leptospira icterohaemorrhagiae was the causative organism. Therefore 2 cc. each of the patient's blood was inoculated into the peritoneal cavities of three guinea pigs. On the sixth day of the disease, jaundice seemed to increase. Gradually drowsiness and anuria were added to the disturbances mentioned. On the seventh day the patient's temperature ranged between 99 and 100 F. From his admission until this day the pulse rate ranged from 120 to 150. The intensity of jaundice increased greatly. On smears no spirochetes could be perceived. On the eighth day the temperature became subnormal and jaundice became

Summary of Leptospira Icterohaemorrhagiae Cases Treated

Case	Date of Admission to Hospital	Sex	Age	Fever at Onset, F.	Pulse Rate at Onset	Muscular Pain	Conjunctival Hyperemia	Jaundice, Date of Appearance	Hemorrhage, Date of Onset	Leptospira Confirmed Microscopically and Biologically	Serum, Amount and Date of Injection	Outcome
1	Oct. 31, 1927	♂	47	102	130 p. m.	+	++	++	+	+	0	Died
2	Oct. 10, 1930	♂	43	103	130 p. m.	+	++	++	+	+	40 cc. 3d	Cured
3	May 10, 1928	♂	53	104	130 p. m.	+	++	++	+ 7th	+	0	Died
4	Dec. 6, 1929	♂	29	104	130 p. m.	+	++	++	+	+	40 cc. 4th	Cured
5	July 10, 1931	♂	41	103	130 p. m.	+	++	++ 5th	+ 7th	+	40 cc. 4th	Cured
6	April 17, 1931	♂	46	104	130 p. m.	+	++	++ 4th	+ 6th	+	40 cc. 3d	Cured
7	Oct. 31, 1931	♂	48	103	124 p. m.	+	++	++	+	+	40 cc. 9th	Died
8	Sept. 30, 1930	♂	60	102.3	130 p. m.	+	++	++	+	0	40 cc. 6th	Died
9	Oct. 29, 1929	♂	35	102.5	130 p. m.	+	++	+	+	0	0	Recovered
10	June 10, 1932	♂	21	101	.....	+	+	+	+	+	40 cc. 3d	Cured
11	Sept. 11, 1932	♂	28	103.2	.....	+	+	+	+	+	40 cc. 4th	Cured
12	Oct. 13, 1932	♂	61	102.6	.....	+	+	+	+	+	20 cc. 4th	Cured

Patients 7 and 8 did not recover after serum injection, owing to its lateness.[5]

Profs. H. Takeya and R. Kaneko of the Kyushu Imperial University reviewed this report.

1. Reiter: Ztschr. f. klin. Med. **88**: 489.
2. Inada, R., and Ido, Y.: Ikaijiho No. 1436, January 1922; Hokuetsu Igakkai vol. 32, No. 6, December 1917.
3. Inada, R., and Ido, Y.: Ztschr. f. Immunitätsforsch. u. exper. Therap. Orig. vol. 31, part 3, 1921; Hokuetsu Igakkai, 1917.[2]
4. Reiter.[1] Inada and Ido, footnotes 2 and 3.

more intense. Petechiae on the costoabdomenal region and on the lower limbs were distinctly seen. By microscopic examination the causative organism could not be found. On the ninth day, diarrhea with profuse hemorrhage was observed several times. Next day the patient's condition was very critical; petechiae (i. e. hemorrhage) increased gradually and became severe. On the twelfth day the patient died under toxic conditions. All the clinical and microscopic evidence confirmed the diagnosis of spirochetosis icterohaemorrhagica.

Guinea Pig Inoculation.—As has been mentioned, on the fifth day of the disease, after it had been proved microscopically that a spirochete was the cause, 2 cc. each of the patient's blood was inoculated intraperitoneally into three guinea pigs.

Guinea Pig 1: On the tenth day after inoculation, the fourth day of the disease, the guinea pig became intensely yellow. The skin was also deeply tinged and the animal seemed very sick. It died on the fifth day of the disease. Autopsy was performed. Leptospira icterohaemorrhagiae was found in the emulsions of the liver and the spleen.

Guinea Pig 2: On the eleventh day after inoculation, the fifth day of the disease, the animal showed jaundice and anuria. On the following day it died, and autopsy was performed. The results were the same as for guinea pig 1.

Guinea Pig 3: Results similar to those for guinea pigs 1 and 2 were found. However, the causal organisms could not be observed in the blood, urine or tissues.

Two cc. of blood from the heart of guinea pig 1 was inoculated into guinea pig 4 for further study, but the results were similar to those for guinea pigs 1, 2 and 3.

CASE 2.—*History.*—A gardener aged 43 entered the Japanese Hospital in Honolulu on Oct. 10, 1928. His family history and past history were not remarkable, but he had always been well. At midnight of October 8 the patient was seized with a rigor, and his temperature rose suddenly to 103 F. He suffered from lassitude, headache and gastric distress such as nausea and vomiting, with accompanying dizziness, prostration and intensive gripping pain in the back and especially in the calf muscles. On the first examination the appearance of jaundice and also marked nervous manifestations were observed. He lay in bed passively.

Here too it was interesting to note that six days before the onset of this disease the patient went into the creek water and stayed there for several hours in order to fish, but according to him there had been no visible wound on his body.

Physical Examination on Admission.—The patient was admitted on the fifth day of the disease after a physical examination which showed that he was poorly nourished. He lay in bed passively. Incidentally, he seemed comparatively young for his age. He complained of intense pain in moving the eyeballs, and the conjunctival vessels were all intensely injected. The scleras showed a fairly yellow discoloration, and possibly there was a slight yellowish tint to the skin. There were no exanthems or edema, but in both inguinal regions a few swollen lymph glands were easily recognized. The liver and the spleen were enlarged and palpable, though not tender. A tendency to hemorrhage as shown by epistaxis and petechial eruptions was seen. The temperature was 102 F. and the pulse rate of over 130 per minute was of the genuine febrile type. The heart conditions also were not quite normal, the second pulmonic tone being strongly accentuated.

The albumin and diazo as well as bile reactions in the urine were positive to a considerable degree, but the Fehling, Wassermann, Kahn and Widal reactions were all negative. Leukocytes numbered 9,600. Two cc. of the patient's blood was inoculated into the peritoneal cavity of each of three guinea pigs. All the pigs afterward gave positive evidence of the routine causative organisms, as described in the report of case 1. Thus at the time of entrance to the hospital the evidence pointing to Weil's disease was very clear, and I had little doubt of the diagnosis.

In accordance with the diagnosis, 40 cc. of Inada and Ido's serum of Leptospira icterohaemorrhagiae was intravascularly injected at intervals of twenty-four hours, strictly according to their instructions; i. e., 1 cc. of this serum was injected three hours before the second 2 cc. injection; this serum was warmed to 37 C.; injections were administered as slowly as possible—in not less than five minutes. The injection of this serum produced brilliant effects. Several minutes after the first injection the patient was seized with a chill lasting for half an hour, and about six hours later his general improvement was striking. On the next day the muscular pains greatly diminished and the marked nervous manifestations subsided almost completely. Jaundice and petechial eruptions also disappeared gradually. Thus day by day he recovered more rapidly, convalescence lasting two weeks without the usual prostration.

The other ten cases showed great similarity in the clinical conditions at the inception of the illness. Therefore, to avoid repetition, I have summarized all the cases which I treated in the accompanying table.

SUMMARY

1. Twelve cases of hemorrhagic spirochetal jaundice were observed in Hawaii, the diagnosis being confirmed clinically in two cases and bacteriologically in nine cases. The disease was proved to be identical with that occurring in Japan by both clinical and bacteriologic criteria.

2. Nine of the twelve patients were inoculated with the Leptospira icterohaemorrhagiae serum of Inada and Ido; seven of the inoculated patients were cured and two died. Death was due to the lateness of the serum injection.

3. Three of the patients did not receive the serum; of these two died but one recovered.

178 Arato Sanbancho.

Clinical Notes, Suggestions and New Instruments

ACUTE POLYRADICULONEURITIS (GUILLAIN-BARRÉ SYNDROME)

A CLINICAL REPORT OF TWO CASES

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Our purpose in this communication is to call attention to the fact that in order to make an accurate diagnosis of the Guillain-Barré syndrome it may be necessary to do more than one spinal puncture to determine the presence of the characteristic albuminocytologic dissociation. We are reporting two such cases.

As far as we could determine, none of the contributors (Guillain,[1] Bassoe,[2] Gilpin, Moersch and Kernohan,[3] Van Bogaert and his co-workers,[4] Gillespie and Field [5] and many others) to this syndrome have emphasized or even mentioned such a fact. Guillain [6] has insisted that this albuminocytologic dissociation be absolutely present before making a diagnosis of this disease. In 1916 he, in collaboration with Barré and Strohl, called attention to a clinical syndrome "characterized by motor disturbances, loss of tendon jerks with preservation of cutaneous reflexes, paresthesias with slight disturbance of objective

From the neurologic service (ward 4) of the Cook County Hospital and from the Department of Nervous and Mental Diseases of Northwestern University Medical School.

1. Guillain, Georges; Barré, J. A., and Strohl, A.: Bull. et mém. Soc. méd. d. hôp. de Paris **40**:1462 (Oct. 13) 1916.

2. Bassoe, Peter: Guillain-Barré Syndrome and Related Conditions, Arch. Path. **26**:289 (July) 1938.

3. Gilpin, S. F.; Moersch, F. P., and Kernohan, J. W.: Polyneuritis: Clinical and Pathological Study of Specific Group of Cases Frequently Referred to as Instances of Neuronitis, Arch. Neurol. & Psychiat. **35**:937 (May) 1936.

4. Van Bogaert, Ludo; Philips, F.; Radermecker, J.; Radermecker, M. A., and Verschraegen, T.: Polyradiculoneuritides, J. belge de neurol. et de psychiat. **38**:151 (March) 1938.

5. Gillespie, J. B., and Field, Elsie H.: Acute Polyneuritis of Uncertain Origin, J. Pediat. **14**:363 (March) 1939.

6. Guillain, Georges: Radiculoneuritis with Acellular Hyperalbuminosis of Cerebrospinal Fluid, Arch. Neurol. & Psychiat. **36**:975 (Nov.) 1936.

sensibility, tenderness on pressure of the muscles, little change in the electrical reactions of the nerves or muscles and noteworthy hyperalbuminosis of the cerebrospinal fluid in the absence of cytologic reaction." Madigan and Marietta [7] in 1938 stated that the increased total protein may be transitory or absent. They report a case in which the first spinal puncture showed 18 mg. of protein while the second showed 122 mg. of protein in the spinal fluid.

CASE 1.—*Motor weakness, multiple cranial nerve palsies, absent deep reflexes, paresthesias, muscle tenderness, partial reaction of degeneration with normal spinal fluid. With progression of symptoms in the hospital a second spinal puncture revealed an albuminocytologic dissociation.*

C. B., a man aged 46, white, a laborer, admitted to the hospital in Dr. Stone's service on March 16, 1940, stated that he had had a cold for two weeks, starting with abdominal pain and developing into a cough, but had otherwise been well until March 14, when on getting up in the morning he felt dizzy, his legs gave way and he fell to the floor. Later in the day his hands felt numb and the following day he had difficulty in swallowing food and drink with occasional regurgitation through his nose, and a nasal speech. His temperature on admission was 98.2 F. and blood pressure 120 systolic, 80 diastolic. On physical examination there were no gross abnormalities. The pupils were round and equal and reacted to light and in accommodation. The palate and uvula rose poorly in the midline. All deep reflexes except the radial and ulnar were bilaterally absent and the right abdominal reflex was not elicited. There was marked ataxia in finger to nose and heel to knee tests bilaterally, more so on the left. Sensation was intact except for vibration sense, which was absent bilaterally below the clavicles. The spinal fluid was clear, colorless and under pressure of 10 mm. of mercury with no block; the Pandy test was negative; there were 10 cells per cubic millimeter, 46 mg. of protein per cubic millimeter, both blood and spinal fluid Wassermann reactions were negative, as were routine blood and urine analyses, and a tentative diagnosis of encephalomyelitis was made.

On March 18 there was no movement of the palate or uvula; the tongue deviated to the left; there was a left ptosis and slight limitation in the left lateral gaze. The patient complained of weakness and numbness "all over." The blood nonprotein nitrogen at this time was 40. The following day muscle tenderness in the calves was marked, the knee and ankle reflexes were absent, there was a questionable left Babinski reflex, absent abdominal reflexes and an absent right cremasteric. Hypalgesia was noted up to the level of the fifth thoracic segment bilaterally. There was a left peripheral facial weakness and both lids were ptosed. The only extra-ocular movement elicited was a slight lateral movement of the left eye (which was not present the next day). The pupils reacted sluggishly to light but well to accommodation. There was weakness in both sternocleidomastoids. A course of sulfanilamide was instituted. On March 21 the condition was much the same, save for a bilateral peripheral facial paralysis and slight movement of the left palate. The spinal fluid was clear and colorless and under normal pressure; the Pandy test was markedly positive; there were 2 cells per cubic millimeter and 375 mg. of protein per cubic millimeter.

Sulfanilamide was discontinued on March 25 as the patient was becoming jaundiced and vomited frequently. He complained less of pain in his extremities and could speak and swallow more easily. Two days later, despite the use of Buller shields and frequent irrigations, he developed a small corneal ulcer. At this time he still had bilateral ptosis and facial paralysis but showed a return of motion of 5 degrees in all fields of his right eye.

On March 29 he could close his eyes, the palate rose well in the midline and the tongue protruded in the midline. The ataxia had improved and he could feed himself. On April 2 his facial paralysis had practically disappeared and his general condition was much improved but the reflexes and vibration sensation were still absent. On April 10 a third spinal puncture revealed 300 mg. of protein per cubic millimeter, a four plus Pandy test and 10 cells. Electrical examination showed a diminished reaction to faradic current (partial reaction of degeneration).

CASE 2.—*Motor weakness, diminished tendon reflexes, paresthesias, muscle tenderness, no change in electrical reaction. The objective signs on entrance were minimal, particularly in comparison with the marked subjective complaints and in the presence of an essentially normal spinal fluid; attention was at first directed away from an organic basis for her complaints. With the appearance of a peripheral facial paralysis, spinal puncture was repeated and albuminocytologic dissociation found.*

A. B., a woman aged 42, white, a housewife, admitted to the hospital in the service of Dr. L. W. Avery on Feb. 22, 1940, stated that on February 18 she first noticed that her legs were becoming progressively weaker and that on the following day she fell on the stairs and had to be assisted to bed. At that time she realized that her arms were weak and she developed numbness of all her extremities. She remained in bed but continued to lose strength until on entrance to the hospital she could not move her legs at all and had markedly weakened grasp with both hands. Her past history was negative save for an attack of weakness of the legs following a fall on the stairs twenty-seven years before which gradually improved over a period of three months. She stated that she had not had a cold. Her temperature on admission was 99.6 F. and blood pressure 128 systolic, 76 diastolic. Physical examination disclosed no gross abnormalities. The pupils were round and equal and reacted to light and in accommodation. Muscle power was weakened in all groups. The deep reflexes were present and normal and there were no pathologic reflexes elicited. The abdominal reflexes were present on the left and absent on the right. Sensation in all modalities was unimpaired. The spinal fluid was clear and under pressure of 13 mm. of mercury with no block; the Pandy test was negative; there were 3 cells per cubic millimeter, 67 mg. of protein per cubic millimeter and both blood and spinal fluid Wassermann reactions were negative. The blood and urine were normal and analysis of the hair and nails for arsenic was negative. The patient's face showed concern and apprehension and she told without much urging a long story of family and economic difficulties. In the ward she continually complained of pains throughout her body, chiefly in her extremities, cried a great deal and insisted without foundation that the nurses, doctors and attendants were discriminating against her. The diagnosis was deferred at this time.

On February 26 she complained of inability to swallow solid food but examination revealed no signs of bulbar paralysis. On February 28 it was noted that her left knee jerk was absent and that the deep reflexes of the upper extremity were greatly diminished. There was no muscle tenderness or sensory disturbances and the electrical reactions were normal. On March 4 she developed a left peripheral facial paralysis and complained of increased muscle soreness especially at night. The spinal fluid on March 5 was clear and under normal pressure. The Pandy test was 2 plus; there were 6 cells per cubic millimeter and the protein 375 mg. per cubic millimeter. At that time there was reported slight movement of both arms. By March 9 she could move her upper extremities well. On March 17 she fed herself for the first time and a marked change was noted in her attitude. She became quite cheerful and optimistic. By March 29 her facial paralysis had practically disappeared and the next day she was able to walk. Examination on April 2 was practically negative. The deep reflexes were bilaterally brisk and equal. On April 17 a third spinal puncture revealed 6 cells, a one plus Pandy test and 90 mg. of protein.

COMMENT

Owing to the fact that development of the albuminocytologic dissociation occurred late in the disease in our two cases it was not possible to diagnose them accurately at first as of the Guillain-Barré type. Since in this syndrome the prognosis is very favorable one readily appreciates the fact that the finding

7. Madigan, P. S., and Marietta, S. U.: Polyradiculoneuritis with Report of Case, Ann. Int. Med. 12: 819 (Nov.) 1938.

of the albuminocytologic dissociation is of utmost importance not only in making a correct diagnosis but also in giving a true prognosis.

SUMMARY

In two cases of Guillain-Barré syndrome the albuminocytologic dissociation was found after the second spinal puncture during the course of the illness and not at the onset. Albuminocytologic dissociation may be a late manifestation of this syndrome.

30 North Michigan Avenue.

INTRAVENOUS INJECTION OF PARALDEHYDE FOR THE CONTROL OF CONVULSIONS

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Sometime in 1919, during the early days of epidemic encephalitis, I had under my care one of the most violent hyperkinetic types of the disease, with extreme restlessness, toxic delirium and intractable insomnia. The course was punctuated by repeated clonic and tonic spasms of brief duration. The patient, a young man in the early twenties, was so violent in his restlessness that he had to be restrained almost all the time and required the constant attendance of two nurses by day and night. He was given all sorts of sedatives and hypnotics in large doses without effect. The barbiturates, if anything, only increased the restlessness. Paraldehyde in large doses by rectum had a transient effect, never lasting for more than fifteen minutes at a time. Spinal tap and drainage of fluid did not seem to influence the course. In sheer desperation I tried the intravenous injection of 1 cc. of paraldehyde. This was done with some trepidation since I did not know what effect the ordinary paraldehyde solution would have on the blood; I knew that the solution was sterile, so that there was no fear of infection. By the time the last drop was injected, literally before the needle was withdrawn, the patient quieted down and promptly fell asleep. For the first time in two weeks he slept about two hours. The injection was then repeated, with similar results. This was followed by the administration of 1 cc. of the drug at varying intervals during the twenty-four hours, which was kept up for several days. The patient gradually improved and ultimately recovered, fortunately without any sequelae.

Since then I have used the injection of 1 cc. of paraldehyde for convulsions of prolonged duration which did not respond to other treatment and in cases of status epilepticus. In most instances the convulsions ceased promptly; in some the effect was neither prompt nor lasting, and even a repetition of the injection failed, on rare occasions, to have the desired result. The types of cases varied. Some attacks were generalized seizures which came in rapid succession in patients who were commonly regarded as epileptic. In such cases the effect of the paraldehyde was almost universally good. When definite organic disease of the brain could be demonstrated, for example tumor, subdural hematoma or dementia paralytica, the convulsions did not always cease with the injection of 1 cc. of the drug. A second injection sometimes succeeded after the first failed. More rarely the paraldehyde was altogether ineffective.

While the effect of paraldehyde in excitement and delirium, particularly of the alcoholic variety, is well known, its intravenous injection is not commonly utilized nor is adequate mention made of it in the literature. Sollmann's Pharmacology does not mention the intravenous use of paraldehyde at all and does not even mention convulsions. Cushny's Pharmacology fails to say a word about intravenous use, tells nothing about intravenous injections and does not refer to convulsions. The Textbook of Medical Treatment (Edinburgh, 1939), by various authors, advises paraldehyde by rectum or mouth for convulsions but does not mention the intravenous use. Bastedo's Materia Medica speaks of its use in eclampsia and other "convulsive conditions." He recommends one half ounce doses by mouth. He adds that in "2 to 5 per cent solution in physiological saline it is also employed intravenously as a general anesthetic for short operations." It is evident that the intravenous injection of paraldehyde is not generally known, though I have used it for twenty years[1] and know of its use by others. This therapeutic procedure is not novel, but it seems to be startlingly so to the uninitiated.

This note is therefore made for the purpose of calling attention to a harmless therapeutic measure which in many instances is specifically effective when other drugs fail to stop convulsions. Repeated seizures always are terrifying to the beholder and frequently resist general medicinal attempts to control them. Status epilepticus, it is well known, may end fatally. The paraldehyde injection is so simple that it should be used in all cases of extremely prolonged or rapidly recurring convulsions. It is not indicated in the simple fit of comparatively brief duration. That generally ceases by itself and needs nothing to control it. The intravenous injection may be used with impunity in states of excitement and delirium with hyperkinesis and insomnia.

70 East Eighty-Third Street.

TETANUS: SECOND ATTACK WITH RECOVERY

REPORT OF CASE AND REVIEW OF LITERATURE

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This is the report of a case in which a second attack of tetanus occurred approximately three and one-half years after a boy had been successfully treated and had completely recovered from one attack.

The method of management as instituted during the first attack has been described[1] and since 1935 has proved successful in 100 cases of tetanus, with a gross fatality rate of 29 per cent. If the deaths occurring within the first twenty-four hours after admission to the hospital are excluded, a net fatality rate of approximately 19 per cent has been achieved, one of the lowest in medical literature.

FIRST ADMISSION[2]

History.—J. Z., a Mexican boy aged 5 years, admitted to the communicable disease unit of the county hospital on Jan. 24, 1936, had been ill two days with inability to open his mouth, irritability and, on the least noise, a stiffness and jerking of the body, legs and back. The parents recalled hazily that the patient had stepped on a nail.

Physical Examination.—The rectal temperature was 98.8 F., the pulse rate 110 and the respiratory rate 24 per minute. Trismus, rigid neck, rigid abdomen, spasticity of all extremities, hyperactive reflexes and several infected lesions on the plantar surface of the right foot were found.

Laboratory Data.—Spinal puncture revealed a clear fluid under slightly increased pressure with a normal cell count and with sugar 52 mg. and chlorides 590 mg. per hundred cubic centimeters of fluid. Subsequent cultures taken of excised tissue from the infected lesions of the right foot yielded Staphylococcus aureus and Bacillus coli but no anaerobic organisms. Microscopic examination of the tissue revealed chronic inflammation and a point of perforation by a foreign body.

Treatment.—As outlined previously, in the first twenty-four hours of admission 160,000 units of tetanus antitoxin was administered. The dosage was distributed intramuscularly as follows: 20,000 units locally about the wound and 40,000 units encircling the right thigh, the latter procedure being repeated in eighteen hours. Cisternal puncture was done and 20,000 units admin-

1. Wechsler, I. S.: Textbook of Clinical Neurology, ed. 4, Philadelphia, W. B. Saunders Company, 1939, p. 653.

From the Communicable Disease Division, Los Angeles County Hospital, the Bureau of Epidemiology, Los Angeles City Health Department, and the University of Southern California School of Medicine.

1. Vener, H. I.: Tetanus Treatment, Preliminary Report, California & West. Med. 48:193-196 (March) 1938.

2. Supervised management was conducted by Dr. Edgar L. Mariette, resident physician, and Drs. Selda Anthony and Francis L. Phillips, interns.

istered about three hours after the initial intramuscular injection of serum. This produced a severe febrile reaction; therefore the intravenous injection of antitoxin was not given until twelve hours had elapsed, at which time 40,000 units of antitoxin diluted in physiologic solution of sodium chloride was used. Following the intravenous procedure a severe serum reaction ensued; consequently the usual second dose of 20,000 units intravenously was not given. Methenamine 15 grains (1 Gm.), 10 cc. of a 10 per cent solution, was given intravenously about ten hours after each intramuscular injection and two hours after the intravenous injection of antitoxin. Sedation for the control of spasms and convulsions was obtained as needed by chloral hydrate and calcium bromide by retention enemas. The lesion on the foot was completely eradicated and subsequently treated with hot potassium permanganate compresses until granulation and healing occurred.

Clinical Course.—Serum sickness developed on the sixth day but responded readily to treatment. The temperature became normal on the eighth day. The disappearance of trismus, rigid neck and rigid abdomen was slow and necessitated a longer stay in the hospital than usual. The patient was discharged from the hospital as cured on the thirty-first day.

SECOND ADMISSION [3]

History.—The same boy at approximately 9 years of age was readmitted to the service on July 5, 1939, with a history of drowsiness for five days, of pains in the chest, of restlessness, of having vomited and of having bitten his tongue repeatedly. His father observed the boy's drowsiness and when he attempted to arouse him the child would become restless, roll in bed, bite his tongue and return to his drowsy state. About a week previous to the illness, the patient had been struck on the right shoulder with a dirty stick, but about two weeks before that he had also cut his right foot on some glass. Following his discharge from the hospital about three and one-half years before, asthma had developed, particularly when the child was playing around horses.

Physical Examination.—The rectal temperature was 100 F., the pulse rate 92 and the respiratory rate 20 per minute. Marked trismus was present, the patient being able to open his mouth only one-fourth inch. The tongue was bleeding and showed evidence of repeated bites. There was marked risus sardonicus. The sternocleidomastoid muscles were tense and spastic. The neck, abdominal and back muscles were all very rigid. Moist musical rales were heard in the lungs, and hyperactive reflexes and frequent convulsions were present. Crusted, semihealed abrasions and lacerations were found about the right shoulder, the right middle finger and the right heel. The lesion on the heel was considered the most probable focus.

Laboratory Data.—Culture reports of excised tissues from the shoulder, finger and heel lesions were all negative for anaerobic organisms. Electrocardiograms one week after admission showed a sinus tachycardia and an inverted T in lead 4F, in keeping with the age of the patient. Examination during the second week disclosed a primary sinus arrhythmia and a premature ventricular contraction, as revealed by a left axis deviation, a polyphasic T in lead 4F and one premature contraction of ventricular origin. Roentgenograms taken of the dorsal vertebrae on dismissal showed no evidence of compression fracture.

Treatment.—Owing to the previous tetanus therapy, during which course serum sickness developed, followed later by the asthmatic attacks when around horses, and because of a current strongly positive cutaneous reaction to serum, the method of management was modified and he was given 100,000 units of antitoxin intramuscularly, administered as follows: 20,000 units about the right shoulder region, 10,000 units about the base of the right middle finger, 20,000 units about the lesion on the right heel and 50,000 units encircling the right thigh. An hour later, under a brief general anesthetic, all described lesions were completely eradicated, due caution being taken to stay within the zones injected. Ten hours later, methenamine 15 grains, 10 cc. of a 10 per cent solution, was given intravenously. Sixteen hours after the first injection of serum another dose of 100,000 units of antitoxin was administered, divided and distributed as before and followed in ten hours by another intravenous injection of 15 grains of methenamine. Thus the patient received a total of 200,000 units of antitoxin, all intramuscularly, within eighteen hours after hospitalization. There were no untoward effects. Spasms and convulsions were controlled with chloral hydrate and sodium bromide by retention enemas as needed.

Clinical Course.—Convulsions persisted during the first twenty-four hours after admission. A profuse purulent nasal discharge associated with a secondary sinusitis and bronchitis occurred, which responded to nasal shrinkage and postural drainage. A severe serum sickness developed on the fifth day, resulting in increased irritability and spasms which persisted for four days but gradually responded to treatment. On the eighteenth day a hordeolum of the left eye and a generalized furunculosis developed, but both responded slowly to treatment.

On the thirty-first day of hospitalization the patient was discharged as cured, with instructions to return at stated intervals for injections of toxoid to afford some degree of future immunity.

REVIEW OF LITERATURE

A review of the literature discloses great confusion in the ability to distinguish between a relapse and a second attack of tetanus.

A relapse may perhaps be defined as a return of the initial signs and symptoms of tetanus following a relatively short period of complete cessation of symptoms, though the persisting infection or lesion may still be present. What constitutes a reasonable time interval between recurrence of symptoms is a debatable point, but it certainly should not exceed several weeks to a month.

When several months has elapsed with complete freedom from symptoms following the successful treatment of clinical tetanus, it seems fair to assume, in the presence of new causative factors, that one is dealing with a second attack of tetanus. All known foci or suspicious lesions must have been completely eradicated and the wounds present during the former attack completely healed.

However, in either case there may not be a history of recent trauma nor may one be able to detect the initial lesion.

Second attacks are reported by: Turanu,[4] with an interval of fourteen months; Bérard and Lumière,[5] who reported Pêhu and Matelin's case, with an interval of five months; Palma[6] with an interval of nine months; Speed,[7] whose case was due to shrapnel, apparently overlooked at the time of the injury, with an interval of fourteen months, and, finally the Dumitrescos,[8] with an interval of six months.

Relapses of convalescent and apparently recovered cases of tetanus may be cited in the cases reported by Fink,[9] whose patient had two relapses within a period of six months, while under continuous medical supervision, and by Honda,[10] whose patient, ten weeks after apparent cure (during which time he had received additional tetanus antitoxin), had a relapse and died.

COMMENT

Our case appears to be the sixth instance reported in the literature of a second attack of tetanus in the same patient. There may be others, and it would be of interest to have them reported.

116 West Temple Street.

3. Supervised management of the case was conducted by Dr. Ralph Hanna, resident physician, and Dr. Lorin C. Swift, intern.

4. Turanu, G.: Tetanos recidivant si tratamentul applicat, Rev. de chir., Bucuresti **38**: 66-70 (May-June) 1935.

5. Bérard, L., and Lumière, A.: Rechutés et recidivés de tétanos, Presse méd. **33**: 993 (July 25) 1925.

6. Palma, R.: A proposito de un caso di tetano recidivo, Ann. ital. di chir. **10**: 101-107 (Jan. 31) 1931; Arch. ed. attid. Soc. Ital. de chir. **37**: 725-728.

7. Speed, Kellogg: Recurring Tetanus, Med. & Surg. **2**: 499 (May) 1918.

8. Dumitresco, Théodore, and Dumitresco, Démètre: Récidive tétanique six mois après le tétanos initial, Bull. et mém. Soc. méd. d. hôp. de Paris **49**: 732-736 (June 12) 1933.

9. Fink, L. G.: Relapses in Tetanus: Two Severe Relapses at Long Intervals, Indian M. Gaz. **44**: 338-340, 1911; J. Trop. Med. & Hyg. **14**: 161 (June 1) 1911.

10. Honda, M.: Ein Fall vom kindlichen Tetanusrezidiv, Orient. J. Dis. Inf. **21**: 33 (March) 1937.

Special Articles

SOME MEDICAL ASPECTS OF CHEMICAL WARFARE AGENTS

A REVIEW

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AND
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The greatest menace of poison gas is its fear inducing properties.

—*F. N. Pickett.*[1]

Ever since the appearance of that huge ugly chlorine cloud in Flanders Field on April 22, 1915, chemical agents have proved themselves efficient warfare agents. Because of this simple fact and in spite of all signed political documents to the contrary, these materials will be used when necessary and when available in future warfare. Since the technic of modern warfare has changed so considerably the civilian and especially the civilian physician must have more than an academic interest and knowledge of chemical warfare compounds.

The official report [2] of the ninth International Congress of Military Medicine and Pharmacy includes the sentence "Considering the great progress of the chemical industry in all countries since the war, the new discoveries made in this field, and the technical advances in other methods of warfare, it is very likely that in future wars the use of gas will be made on a larger scale." Incendiary bombs and mustard gas were used extensively and efficiently in the Italo-Ethiopian War. So far, incendiary bombs and flame throwers, but not gas, are being used in the present European wars.

There have been too few voices raised to rid the public of this propaganda induced fear of chemical warfare. Notable of these voices has been J. B. S. Haldane [3] with his "Callinicus: A Defence of Chemical Warfare." Others have been the chemist James Kendall [4] with his "Breathe Freely" and, in this country, Prentiss [4] with his technical work on "Chemicals in War." Frequently the noninformed physician shares in this unwarranted fear of chemical warfare. Since the last war there have been relatively few changes in the actual principles of the treatment of chemical warfare casualties, but there has been considerable progress in the study of the organization of the civilian aspects of this form of warfare. In recent years only scattered reports have appeared in the American medical literature.

In order to emphasize the clinical aspects of the lesions produced by the chemical warfare agents, we have included in our review only the more important principles. We have learned that otherwise the subject will appear too confusing and the practical aspects will be lost. The detailed study of specific portions can be investigated by the individual interested.[5] This review will consider the military aspects only as they are concerned directly.

Very early it was found that all the agents used at present could be classified, physiologically, into five groups: (1) lacrimators, (2) lung irritants, (3) vesicants, (4) sternutators, (5) nerve and blood poisons. This classification is essentially that of Julius Meyer.[6] The Chemical Warfare Service of the United States during the last war examined some 4,000 substances, only fifty-four of which were tried in the field and only twelve in use at the end of the war. At the present time, and as far as can be determined, the efficient chemical warfare materials of England, France, Germany, Italy and the United States are practically the same. In the groups indicated the more important ones, from the point of producing casualties, are the lung irritants and the vesicants.

It is seen readily that quite a number of difficult situations arise with the problem of caring for the casualties of civilians and especially of large numbers of civilians. Previously trained personnel, both medical and nonmedical, is absolutely necessary. This is called "gas discipline." The number of gas casualties is always inversely proportional to the character of gas discipline. This has been realized in all European countries and for some years this form of training and preparedness has been going on.[7]

Physicians will be concerned with those casualties in which pulmonary damage and skin burns have been incurred. Sometimes in the midst of confusion and panic but little can be done, and yet, on the other hand, treatment must be instituted as early as possible to prevent serious reactions and death. It is seen from the table for the dangerous lung irritants that absolute rest is needed and, of course, rest in a gas free atmosphere. Any shelter that is free from the penetration by the noxious gases must have some method of producing or obtaining its own pure air supply, otherwise the "air tight" room will soon become uncomfortable and perhaps even dangerous, especially if it is crowded. So the patient must be brought by stretchers or ambulances to previously arranged treatment centers. Because of the insidious nature of these gases, it is much safer to consider any gassed patient as in a serious condition. Artificial respiration must not be given since the patient gassed by the pulmonary irritants must be kept at absolute rest. The most serious symptom to combat is, of course, pulmonary edema. Especially with phosgene, this may coexist with deep cyanosis and increased venous pressure (the so-called blue type of asphyxia) or with the even more serious form, the shock form (the so-called pallid or gray type). The treatment is, of course, different with each of these types. For the first type, oxygen of course should be given. If the various types of oxygen inhalation apparatuses are not available, oxygen may be given in a much less efficient manner by means of subcutaneous injections. Henschen [8] reports that 500 cc. may be so given. Venesection also should be done, especially if the neck veins continue to be distended and the right side of the heart continues to be dilated. At the present time some are advising the prophylactic use of chemotherapy, such as the quinine derivatives and sulfapyridine, to prevent the

Professor Cullen died, April 12, 1940.

From the Department of Pediatrics and the Children's Hospital Research Foundation.

1. Pickett, F. N., quoted by Kendall, James: Breathe Freely! The Truth About Poison Gas, New York, D. Appleton-Century Company, 1938, p. 27.
2. Bainbridge, Capt. William Seaman: Report on Ninth International Congress of Military Medicine and Pharmacy, Mil. Surgeon **82**: 226 (March) 1938.
3. Haldane, J. B. S.: Callinicus: A Defence of Chemical Warfare, London, Paul Kegan, 1925.
4. Prentiss, Augustin M.: Chemicals in War: A Treatise on Chemical Warfare, New York, McGraw-Hill Book Company, Inc., 1937.
5. Goldman, Leon, and Cullen, Glenn E.: The Vesicant Chemical Warfare Agents, to be published.
6. Meyer, Julius, quoted by Héderer, C., and Istin, M.: L'Arme chimique et ses blessures, Paris, Libraire J. B. Baillière et fils, 1935, p. 42.
7. Official Publications on Air Raid Precautions, London, His Majesty's Stationery Office, 1936, 1937, 1938, 1939.
8. Henschen, C.: Chirurgische Notmassnahmen bei der Behandlung der Kampfgasvergiftungen der Grünkreuzgruppe, (Chlor, Phosgen, Perstoff, Chlorpikrin), Schweiz med. Wchnschr. **69**: 961 (Oct. 21) 1939.

secondary bronchopneumonia. However, bronchopneumonia is not very common on recovery from the acute phase of phosgene poisoning and the bacteriology of the bronchopneumonia has not been studied thoroughly. Therefore the value of these drugs is not known at present. For the pallid type of asphyxia as much of by the lung irritants is acute pulmonary edema associated with emphysema, and pulmonary vessel thromboses. The other significant visceral pathologic changes include purpura especially throughout the brain, and dilatation of the right side of the heart. When a patient gassed by a lung irritant also needs surgical attention,

*Some Clinical Aspects of the More Important Chemical Warfare Agents**

Group Agents	Physical State and Odor	Persistence	Significant Concentrations, Mg./L or Oz./1,000 Cu. Ft. Exposure of 10 Minutes (Prentiss)			Symptoms	Treatment	Protection Against
			Lowest Irritant	Intolerable	Lethal			
Lacrimators								
Chloracetophenone	Powder with a locust odor	Days (solid)	0.008	0.0045	0.85 (impossible to reach in field conditions)	Eyes water and burn; skin, especially freshly shaven, smarts	Boric acid eye solution, sodium bicarbonate solution to skin	Gas mask
Bromtenzylcyanide	Powder with sour fruit odor	Days (solid)	0.00015	0.0008	3.5	Watering of eyes; burning of nose	Boric acid solution	Gas mask
Lung irritants †								
Phosgene	Colorless gas, odor of moldy hay	Nonpersistent	0.005	0.20	0.50	Choking cough; insidious; blue or pallid types of asphyxia	Absolute rest; warmth; shock treatment; oxygen therapy methods; for pulmonary edema	Gas mask
Chloropicrin (used in civil life as insecticide, fungicide, and to remove rats from ships)	Slightly oily colorless liquid; odor of fly paper	Nonpersistent (more so, however, than chlorine or phosgene)	0.009	0.050	2.00	Lacrimation and vomiting in weaker concentrations; definite lung irritation; may be insidious	Wash eyes with boric acid solution, otherwise, same treatment as for phosgene	Gas mask
Vesicants								
Mustard gas	Oily and colorless in pure state; later becoming brown; mustard or garlic odor	Persistent	0.001	Eyes 0.001 (1 hr.)	0.15	Delayed symptoms 2-6 hours from vapor burns, 15 minutes to 1 hour from liquid burns, blisters on skin and severe irritation of lungs if breathed in	If treatment delayed, skin burns cannot be prevented; wash with soap and water, gasoline, carbon tetrachloride, weak solution of bleach powder (irritant ?); late treatment that of burns in general	Gas mask protects only the lungs; special clothing
Lewisite	Colorless liquid; odor of geraniums	Persistent; slightly less than mustard gas	0.0008	0.0008	0.12	Sneezing; in 15-30 minutes skin burns; later arsenic poisoning	Immediate treatment, soap and water; ferric hydrate pastes and general measures	Gas mask; special clothing
Sternutators								
Diphenylchlorarsine (sneeze gas)	Dark brown liquid; odor of shoe polish	Nonpersistent	0.0005	0.0012	1.50	Coughing, sneezing, vomiting, headache and mental depression later	Rest; mouth wash of sodium bicarbonate solution and instil in nose also; early, breathe chlorine from bleaching powder bottle	Gas masks with excellent filter as developed at present (if mask is defective, this gas will penetrate)
Diphenylamine chlorarsine (adamsite)	Solid; dark green or brownish yellow, almost odorless at ordinary concentrations	Nonpersistent	0.00038	0.005 (3 min.)	3.00	Same as foregoing	Same as foregoing	Same as foregoing
Nerve and blood poisons								
Hydrocyanic acid	When pure, a clear, colorless liquid with odor of bitter almond	Nonpersistent	0.020	0.030	0.200	Faintness, dizziness, dryness of throat, coma and death	Death too quickly for any therapy; may try artificial respiration, restoratives	Gas mask (special canister)
Carbon monoxide (produced by practically all explosives)	Colorless, odorless gas	Nonpersistent	0.7-0.8‡ (1 hour)	1.1-1.4‡ (1 hour)	4.8‡ (1 hour)	Blurring of vision, weakness, headache, coma, peculiar cherry tint, death	Remove to fresh air, artificial respiration, intravenous methylene blue (?)	Gas mask (special canister)

(Although hydrocyanic acid and carbon monoxide were tried in the last war, they in all probability will not be used now because of their too rapid dispersion.)

* Table modified from Prentiss,[4] E. B. Vedder (Medical Aspects of Chemical Warfare); Sartori (The War Gases) and others.

† Chlorine is not included because chlorine is not used as such by any nation.

‡ Henderson and Haggard (Noxious Gases).

routine shock therapy should be given as is possible. In this condition the shock plus the emphysema, of varying degree and distribution (even mediastinal) may obscure the presence of moisture in the chest. In general, the treatment of this form is very discouraging and the patient may die within several hours in spite of intravenous injections of various forms of blood and other fluids, and cardiac and respiratory stimulants, even if all these materials are available in the emergency first aid stations. Briefly, the essential pathologic condition caused he may be operated on when his general condition "warrants." Local anesthesia, nerve block of sacral or spinal type, are the forms preferred. Chloroform may be given.[3]

The other dangerous forms of gas poisoning are by means of blistering agents, the "chemical lepers." This phase has been reviewed in great detail for the dermatologist.[5] Because of the persistence and efficiency of these agents, these will be used frequently in preference to the lung irritants. These gases too are insidious. For

some hours with mustard gas there is no complaint; then the eyes may become reddened and the skin burns and itches, especially in the moist sweating areas. Erythema appears chiefly in mild cases, in the form of a punctate eruption if the exposure has been slight. This may clear in from twenty-four to forty-eight hours. In severe cases the color may become darker, bullae are formed after eight to twelve hours and, if the patient has breathed in the gas, bronchopneumonia may occur. Occasionally pigmentation results from mustard gas burns even after mild degrees of erythema. This may last for several weeks and then the skin desquamates and the color fades. To prevent skin burns, the vesicant must be removed from the skin in from three to ten minutes. Under most situations and especially with uninformed patients this will be impossible. It is important for the physician to note that these patients are dangerous for him to handle. Unless the physician is protected properly against breathing the chemical agent vaporizing from any of these areas, he, the physician, will become a casualty. The gas mask will protect only against breathing the poison gas but will not protect the skin surface or the clothing. Special oilskin gloves and oilskin clothing are needed. With these cumbersome outfits it is difficult and impossible to work for any long periods. Liquid vesicant agents may be removed from the skin with soap and water, kerosene, gasoline or carbon tetrachloride. It must be remembered that these materials are only solvents and not neutralizing agents and therefore fresh cloths should be used each time. If bleaching powder solution is used to oxidize the gas, this solution of bleaching powder must be removed from the skin in order to avoid burning with this also. For burns with lewisite gas, a neutralizing agent such as 5 per cent solution of sodium hydroxide may be used and then rinsed thoroughly from the skin. After the bulla has formed, débridement should be done. Various pastes are then used, but it is doubtful whether they have any "specific" action. Tannic acid solution was used to treat mustard gas burns in the Italo-Ethiopian War and the results, uncontrolled, seemed encouraging. These cutaneous burns are relatively slow in healing and the patient's morale must be kept up during this period. Unlike the pulmonary complications following the lung irritants, bronchopneumonia is much more common after irritation of the tracheobronchial tree with mustard gas. For lewisite, the general measures to minimize the subsequent arsenical intoxication must be given. The usual bland treatments should be used on the eye injuries. It is recommended that no cocaine be used in the eye and that the eye be not bandaged. Briefly, the pathologic changes of mustard gas poisoning include, in the skin, perivascular infiltrates, vessel thromboses and vesicle and bulla formation. In the lung the picture is chiefly that of severe ulceration of the trachea, larynx and bronchi; bronchopneumonia and pulmonary abscesses may occur later.

Since mustard gas is persistent, lasting for days, weeks and even months under certain conditions, areas contaminated by this gas are dangerous for some time. These areas must be freed from mustard gas or decontaminated, as it is called. This is done usually with bleaching powder solutions and vigorous cleansing; contaminated clothing may be decontaminated by long exposure to windy air, by boiling, by chlorination or by the action of bleaching powder. As was mentioned before, special clothing must be worn, because this gas will penetrate cloth and even shoe leather. Because of all this elaborate routine, it is seen readily that special treatment centers are required to treat mustard gas patients. Moreover, food and water supplies also can be contaminated. Severe poisoning can result from the ingestion of such materials. Water can be freed by the methods mentioned. Food usually must be discarded and destroyed. As a rule, intact cellophane wrappers or glass jars will protect food. Ordinary paper wrapping and paper bags do not protect. It should be emphasized again that early and prompt measures must be taken for patients affected by the lung irritants and blistering agents; in many instances even this purely symptomatic treatment will not be available.

BRIEF SUMMARY OF FIRST AID MATERIALS

From the data presented it is evident that there must be set up special treatment centers for the chemical warfare casualties. These patients cannot be handled adequately in an ordinary first aid station. In the treatment center, special rooms must be set aside for patients contaminated by mustard gas. Special precautions must be taken about the clothing of such patients. The general material required in the ideal protected treatment center would be (1) stretchers and beds, (2) blankets, (3) hot water bottles, (4) hot drinks, (5) fresh clothing, (6) oxygen breathing apparatus, (7) gastric tubes, (8) gas masks, (9) mustard gas resistant clothing, gloves, sheets, (10) venesection needles. The special materials required would be (1) bleaching powder, (2) sodium bicarbonate, (3) alcohol, (4) carbon tetrachloride, (5) kerosene, (6) soap and water, (7) 5 per cent sodium hydroxide, (8) ferric hydrate paste (value ?), (9) compound tannic acid solution,[9] to be used for patients received with bullae already on the skin, (10) silver nitrate solution (10 per cent), (11) cocaine solutions, (12) morphine, (13) gentian violet (1 per cent), (14) heart stimulants, (15) respiratory stimulants (caffeine, xanthine derivatives), (16) fluids for intravenous use: (*a*) blood, (*b*) plasma, (*c*) dextrose, (*d*) acacia, (*e*) methylene blue, (*f*) sodium thiosulfate. As mentioned before, all cases should be considered as serious and so treated. For minimum therapy, a patient subjected to a lung irritant must be held at absolute rest and kept warm for some hours. For the patient exposed to mustard gas, the clothing must be removed, the body surfaces washed with soap and water or kerosene or bleaching powder or paste must be used. In times of stress, this really may be all that can be done.

To keep a treatment center effective, patients should be removed as quickly as possible. They can be moved only by ambulance when that procedure is safe for the patient and the patient himself is not potentially dangerous to those who may care for him in the next treatment area (hospital).

THE GAS MASK

The ordinary gas mask consists essentially of some form of filter, contained in a metal box called the canister, and a tight fitting face mask. All air breathed in must come through the filter. The expired air is forced out through a valve. The filter is really a combination of mechanical filtering and of chemical reaction to adsorb and neutralize many of the gases. It is difficult to say just how long a mask will last. Apparently for the concentrations encountered in civilian life the mask

9. Fantus, Bernard, and Dyniewicz, H. A.: Compound Solution of Tannic Acid in the Treatment of Burns, J. A. M. A. **109**: 200 (July 17) 1937.

may be good for many months (?). In general, the mask now in use will protect against the breathing in of all the present known war gases. The ordinary masks, however, will not protect against ammonia, hydrocyanic acid or carbon monoxide gases. For certain individuals a diaphragm may be incorporated in the face piece of the mask so that one can speak with the mask on. If one wears glasses constantly it is difficult to wear those with the ordinary mask. For the eye pieces of the mask, materials are provided to protect against clouding over with moisture. When the proportion of oxygen in the air is low, below 16 per cent, the gas mask will be of no use. Under these circumstances the person must carry, attached to his mask, his own oxygen tank, and the whole intake system will be a closed one. A mask with a hose reaching out into pure air can also be used. The gas masks for infants must of necessity be really a complete tent arrangement. Animals also must have some sort of mask.

Of course, the mask reduces to some extent the efficiency of the individual wearing it. When the wearer becomes accustomed to the mask and loses his fear, he can do his ordinary work with ease. It is difficult, however, to do fine and close work with the mask.

SPECIAL SITUATIONS AND REQUIREMENTS

It is obvious that the use of chemical agents for warfare against civilians suggests many additional problems. Only a few of these will be considered here. It has been mentioned before that a person affected by blistering gases may have also wounds requiring surgical treatment. This patient is dangerous to care for until, at least, his clothing is removed and his skin treated. There is also another angle to this, namely special precautions in the operating room under the potential danger of bombing with war gases. If the patient is getting general anesthesia, this anesthesia must go through a special mask. The surgeon and first assistant should have masks. Some recommend that, if there is any possibility that the air in the shelter may go below the desired oxygen levels, these two important members of the surgical teams be provided in advance with oxygen masks. All others in the room must also wear masks. For mustard gas, special clothing is needed in addition. If possible, extra personnel should be in the room to take care of decontamination so that the surgeon and the patient need not be disturbed. To avoid this complicated set up, operating rooms in the city should be bomb proof and have independent air purification.

The medical care of chemical warfare casualties produced on board ship is even more complicated. There is usually no good place to evacuate casualties. The ventilating system must be watched carefully; otherwise the gases may be drawn throughout the ship. Mustard gas may remain on the painted surface for some time and then, when warmed, vaporize and cause burns. Food cargoes carried by the ship may be contaminated also. It has been suggested that ships gassed, especially with mustard gas, be marked with special quarantine flags.

Agents for chemical warfare are dangerous to manufacture. The workers must be protected against the industrial hazards, chiefly various forms of cutaneous irritations and burns. Cleanliness in the factory and training of the worker (gas discipline) will do much to reduce these hazards.

INCENDIARY AGENTS

Of great importance to civilian population is the use of "thermite" bombs. Thermite is an intimate mixture of iron oxide and finely powdered aluminum. With a suitable starter, at high temperature, the aluminum and iron oxide react to form aluminum oxide and molten iron. There is also the kilo magnesium (electron) bomb[10] with a primary composition of the thermite type and the tube of an alloy of magnesium with a small proportion of aluminum. In this bomb everything, including the tube, is incendiary material. When bits of these materials come in contact with the body, very severe deep burns are produced. As one might imagine, burns even from tiny particles are very painful. The treatment is the usual treatment for severe metal burns. Such burns are said to cause more fear and panic than burns from the vesicants.

Phosphorus burns may also be encountered when this chemical is used to produce concealing smokes. These burns are treated by keeping them protected from all air by means of water or oil, or by using copper solutions to form insoluble salts. Combustible oils mixed with soap or jelly and containing small pieces of metallic sodium may also be used as incendiary agents.

RESIDUAL EFFECTS OF CHEMICAL WARFARE AGENTS

There is a vast amount of misinformation on the residual effects of chemical warfare agents. The blame for practically every complaint, respiratory or otherwise, in veterans has been placed on "being gassed in the war." The truth of the matter is that there are relatively few residuals from chemical warfare and certainly not those horrible ones following shrapnel, gunshot wounds and the like. If any kind of warfare could be called "humane," chemical warfare warrants such a term. The question of the future of chemical warfare casualties has been studied thoroughly by Gilchrist and Matz.[11] In most instances "gas discipline" was very poor and many casualties were suffered through carelessness. Moreover, with little if any immediate therapy in most cases the relatively low percentage of sequelae is indeed surprising. With an efficient arrangement with trained personnel, this percentage could be reduced even more.

THE DETECTION OF CHEMICAL WARFARE AGENTS

The most reliable method at present to detect these compounds is through their odor. This, of course, presupposes a knowledge of the characteristic odors of these gases. Such knowledge can be obtained by repeated training. This is done usually by smelling small quantities of these materials adsorbed on particles of charcoal and contained in a glass bottle. It is important that the odor be recognized with the first cautious sniff, since repeated smelling dulls the olfactory sense and may even be dangerous. A trained observer is said to be able to identify the agent by other immediate effects on the body such as irritation of the eyes, nose and throat and pricking of the skin. Prentiss[4] stresses the fact that one should be able to distinguish gas from powder fumes. With the ignorant untrained civilian there is only the memory of what he has read or heard and, later, what he has experienced.

There is no simple, easy, specific chemical method to detect the presence of these war gases. Gigon and

10. Air Raid Precautions Handbook No. 9: Incendiary Bombs and Fire Precautions, London, His Majesty's Stationery Office, 1939, p. 1.
11. Gilchrist, H. L., and Matz, Philip B.: The Residual Effect of War Gasses, Washington, U. S. Govt. Printing Office, 1933.

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Noverraz [12] have described a colorimetric quantitative method depending on the hydrolysis of the gas with the formation of acids. They state that the determinations can be made very quickly.

SUBJECTS NOT INCLUDED

Since this review is to be practical and clinical, many subjects have been omitted. Some of these are of great importance, such as the medical aspects of individual protection in the home, the detailed setup of mass protection facilities, the elaboration of "fear psychology" of gas masks and chemical warfare, the applications of methods of chemical warfare to insect destruction and the like, review of some of the work on the hydrolysis of the war gases, and the chlorination of mustard gas (and lewisite). There has been left out a discussion of some of the less common gases such as ethyldichlorarsine, phenyldibromarsine, ethyldibromarsine, perstoff (trichlormethyl chloroformate), cyanogen chloride, and those chemicals which produce screening smokes such as titanium tetrachloride, sulfur trioxide and oils. Nothing is known at present about the administration of sulfanilamide or its related compounds in gas poisoning in order to prevent subsequent wound infection or for the actual therapeusis of infections associated with the gas poisoning. The subject of complete destruction of cities by poison gas is not even considered, since this is entirely impossible now and is merely a myth produced by imaginative writers. There is always the real danger of the production of new and powerful gases which will not fall into our present categories. This is not an easy task because the gas must have the following properties:

1. The gas must have a definite toxic quality (or produce smoke or incendiary activity).
2. The raw materials must be available.
3. The gas must be noncorrosive on storing.
4. The gas must be stable.
5. The gas must be heavier than air.
6. The gas should be susceptible of being liquefied.

The chemical warfare industry is closely associated with the dye industry. From our medical point of view we can always give symptomatic treatment. Our ideal, however, should be causal therapy. Our Chemical Warfare Service [13] adds that "no agent is known which is more effective than mustard gas in sending men to the hospital; and there is little evidence that a gas more effective than phosgene is available for poisoning the air."

SUMMARY

This review is not intended to be an encyclopedic reference work on chemical warfare. It merely emphasizes some of the more important points of the medical aspects of such warfare especialy as it relates to the civilian physician. We must face the fact that such warfare is efficient and may be used. In fact, it seems much less dangerous as regards fatalities and residuals than the other commoner and more horrible forms of warfare. This brief report will provide a vocabulary for a type of medicine which is new to most of us, a type of medicine which will interest every branch of experimental and clinical medicine. With knowledge in advance we can assist in driving away the fear of the unknown. We can then reduce the number of casualties from these chemical compounds.

12. Gigon, A., and Noverraz, M.: Détection de gas de guerre, Schweiz. med. Wchnschr. **69**: 859 (Sept. 23) 1939.
13. Office, Chief of the Chemical Warfare Service: The Story of Chemical Warfare, Washington, D. C., January 1939.

COMMUNITY OF INTEREST BETWEEN FEDERAL TRADE COMMISSION AND MEDICAL PROFESSION

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Professor Quiz would probably get some interesting answers from physicians as to what the FTC is and how it functions. That it is a member of the New Deal alphabetical family might be a good guess, but this would only get one the gong, as we shall later see. Even though we should give out the clue that the FTC is not a new governmental agency but one which has been in active operation for a quarter of a century, there would perhaps still be few who have a clear conception of the functions of the FTC which are of interest to physicians. It is for this reason that some explanations are believed to be not only appropriate but necessary for the information of the American medical profession.

At the risk of offending the intelligence of some of the better informed readers of THE JOURNAL, this explanation will be made quite elementary. It will be noted first that the fundamental principle on which the duties of the FTC rest is the elimination of "unfair methods of competition in commerce, and unfair or deceptive acts or practices in commerce."

Among the unfair trade practices with which the FTC has to deal, false and misleading advertising is one of the foremost problems. Of all the appeals made for popular attention, those pertaining to health and beauty aids are most voluminous. In the hope of securing these precious treasures, mankind will make any sacrifice of money and effort. The lure becomes all the more irresistible when offered at bargain prices as a short cut to the desired goal. In the keen competition for business, therefore, there is great temptation for venders of foods, drugs, cosmetics and health devices to paint the pictures of their products in too rosy a light.

TRUTH IN ADVERTISING

It is perhaps rather generally understood that the Food and Drug Administration of the Department of Agriculture has something to do with the regulation of this group of products. It may not be so generally known, however, that the FTC also has obligations in this field. In order to dispel any confusion that may exist in this connection, it will be observed that the Food and Drug Administration exercises supervision over misbranding (labeling) and adulteration, while the FTC is charged with the duty of confining advertisers of these products to fair and truthful representations. This is strongly reminiscent of the trend of medicine from its earliest beginnings. Although no one would presume to say that medicine at any stage of its history has ever been free from fallacies, it has always been a champion of truth against falsehood in medical teaching and practice. While many of the medical axioms of a century ago would today represent the trappings of quackery, medicine has always been motivated by a sincere purpose to expose falsehood and espouse truth in accordance with the best standards of any given period. It should therefore be welcome news to the medical profession that its age old struggle for truthfulness with respect to drugs and similar products is now further fortified by the regulatory authority of the federal government.

For a clearer understanding of the way in which the FTC fits into this picture, a brief reference to the legal background will be helpful. The procedure in the interest of eliminating false advertising has not always been so simple and direct as it is at the present time. Prior to 1938 it was necessary, in addition to showing that the advertising actually was false and misleading, to establish the fact that such false advertising was detrimental to the interests of competitors and that in correcting the offending advertising the public interest would be served. These were the essential elements held by the Supreme Court to be necessary in order to establish jurisdiction under section 5 of the act of 1914, which declared "unfair methods of competition in commerce" to be illegal. Under this provision the major emphasis was placed on the protection of one competitor against unfair practices of another. It was obvious that the consumer's interest required more specific safeguarding. In order to accomplish this and otherwise to extend and simplify the legal procedure, the Wheeler-Lea amendment was enacted in 1938. Section 5 was amended by adding to the phrase "unfair methods of competition in commerce" the words "or unfair or deceptive acts or practices in commerce." This serves to give specific recognition to the Commission's duty to protect the public directly by the prevention of all unfair or deceptive acts or practices in commerce, as well as indirectly through the public's interest in the preservation of fair competition.

In addition to amending section 5, the Wheeler-Lea amendment appends several new sections (12 to 18 inclusive), giving the Commission further specific powers over the advertising of foods, drugs, cosmetics and devices. First of all, false advertising is defined in the following manner:

SEC. 15(a) The term "false advertisement" means an advertisement, other than labeling, which is misleading in a material respect; and in determining whether any advertisement is misleading, there shall be taken into account (among other things) not only representations made or suggested by statement, word, design, device, sound, or any combination thereof, but also the extent to which the advertisement fails to reveal facts material in the light of such representations or material with respect to consequences which may result from the use of the commodity to which the advertisement relates under the conditions prescribed in said advertisement, or under such conditions as are customary or usual. . . .

Any false statement, either direct or implied, by whatever advertising medium, comes within the foregoing definition. But it should also be observed that failure to reveal material facts is likewise classed as false and misleading advertising.

POWERS OF THE FEDERAL TRADE COMMISSION

Of special interest is section 13(a), which authorizes the Commission to apply for injunction under certain specified circumstances, whenever the Commission has reason to believe that such action "would be to the interest of the public." On securing a temporary injunction against the advertising of a product, all claims complained of in the injunction are ordered to be suspended "until such complaint is dismissed by the Commission or set aside by the court of review, or the order of the Commission to cease and desist made thereon has become final within the meaning of section 5." Already the injunction provisions have been invoked in a number of cases involving dangerous drugs. In no instance has an application for injunction been denied. Notable in this group of products are numerous abortifacient remedies containing a familiar coterie of drugs—ergot, ergotin, apiol, oil of savin, cotton root bark, oil of tansy, quinine and various purgatives, among which aloes, cascara and podophyllin predominate. Another important group of preparations against which injunctions have been secured is the fat-reducing remedies. The lure of fat reduction is held out to overplump females by many and devious methods ranging all the way from hokus-pokus to toxic and dangerous drugs, including thyroid substance and the dinitro compounds dinitrophenol and dinitrocresol. Even the credulous soul who falls victim to some crackbrain theory will receive protection through the suppression of false advertising, but the injunction is reserved for the immediately dangerous products such as indicated.

The last sentence of section 15(a) was drafted with particular reference to the medical profession. This sentence reads as follows:

No advertisement of a drug shall be deemed to be false if it is disseminated only to members of the medical profession, contains no false representation of a material fact, and includes, or is accompanied in each instance by truthful disclosure of, the formula showing quantitatively each ingredient of such drug.

Some doctors have been under the impression that products advertised only to the medical profession are exempted from the requirements of the FTC. This conception is erroneous. It is assumed in the wording of the act that if a physician knows the formula for a preparation he is in a position to judge for himself as to the truth or falsity of the advertising representations relative thereto. It is, however, required that the advertising shall contain "no false representation of a material fact." Falsehood here, as elsewhere, may stem not only from what is said of a product but also from "material facts" which are withheld when such facts are necessary for the proper appraisal of a product.

One more item should be made clear before passing on from the legal considerations. The FTC cannot stop the sale of any product because of false advertising, nor is it endowed with authority to impose punitive penalties. Its maximum corrective power in such circumstances is the issuance of a cease and desist order specifying claims and inferences in advertising which are adjudged to be false and misleading after weighing all the evidence bearing on the subject. The cease and desist order also demands the discontinuance of the specific claims "or others of like import." While the law provides formidable civil penalties for violation of a cease and desist order, and criminal penalties including both fine and imprisonment for false advertising of commodities injurious to health, the prosecution leading to the imposition of these penalties is conducted by the Department of Justice rather than the FTC.

Since a discussion of legal matters is not destined to evoke an outburst of enthusiasm among physicians, I have endeavored to comment on the original act and the Wheeler-Lea amendment only enough to bear out the fact that the present law with respect to false advertising of foods, drugs, cosmetics and devices is reasonably adequate to deal with most of the abuses in this field. It is reasonable to suppose that the physician's major interest lies in the application of this law to matters which more or less concern him.

From what has already been said there could hardly be any mistake as to the type of advertising against which this discussion is directed. This is distinctly not an attack on advertising in general. There is good advertising and bad advertising. The former has a vital

and necessary part to play in our economic life and welfare. The latter is an outlaw against which the hand of the law and the bans of decency are raised. It is gratifying to note that there is an ever increasing urge from within the drug industry itself for more conservative and reliable advertising. It is being recognized not only as good ethics but also as good business. Any honest advertising, whether directed to the medical profession or to the lay public, may be assured of no difficulties at the hands of the Federal Trade Commission. On the other hand, false and fraudulent advertising may expect no quarter. No fair-minded advertiser could find fault with this policy. On the contrary, those who strive to tell the truth about their wares naturally applaud any measures designed to force their less scrupulous competitors to do likewise.

USE OF PROPRIETARIES

Preparations which are "factory made" from fixed formulas are called proprietary remedies. Perhaps the average physician would consider it beneath his professional dignity to discuss them. But in no small measure the medical profession itself has fallen into the habit of prescribing proprietary medicines. The art of prescription writing in its elemental form is on the road to oblivion. Prescriptions rarely contain specifications as to component drugs and quantities of each. The prescription will commonly specify some combination of drugs designated by a trade name because some detail man or the manufacturer's literature received with the sample has convinced the physician that the preparation is good for certain symptoms or ailments. He may know next to nothing about the actual contents of the product, and even less about their individual and collective therapeutic action. His knowledge of the therapeutic uses and limitations of ready-made products is all too often confined to such information as the manufacturer sees fit to give. In many instances the physician is quite as easily led astray by false advertising as is the layman. More will be said on this subject later in connection with testimonials.

While this may be a somewhat overdrawn picture, where is the doctor who doesn't at any time resort to ready-made drugs and mixtures bearing meaningless trade names? If these things be true, it hardly becomes the medical profession to look with scorn on proprietary preparations as such. There is, of course, little excuse for physicians prescribing proprietary medicines blindly, as they have at their disposal the advice of the Council on Pharmacy and Chemistry of the American Medical Association for their guidance. However, either through disregard of available advice or otherwise, many doctors do persist in taking their instruction in modern drug therapy from commercial houses. Since this is so, it should be gratifying to know that there is an agency which is authorized and able to require the drug distributors to tell the whole truth and nothing but the truth about their products.

DRUGS FOR SELF MEDICATION

The great bulk of the FTC's problems with respect to drugs, however, has to do with preparations sold to the lay public for self medication. This being the case, some may ask Why bring that up in a physician's magazine, since physicians as a rule are constitutionally opposed to self medication? Let us look at this issue in an unimpassioned and matter of fact light. Whether we like it or not, self medication is the inalienable right of Americans, and it is here to stay. Physicians cannot disclaim any interest in the matter, if for no other reason than that too much self medication is detrimental to their professional interests. Another more laudable motive for looking into this matter with a searching eye is the fact that medical men are committed to the task of protecting health and life by whatever means, to the fullest extent of their ability. It is for this reason that for many years the columns of the American Medical Association have been thundering away at quackery and nostrums that prey on the lives and financial resources of credulous millions. A splendid contribution has thus been made, but the full fruition of these efforts rests with regulatory measures whereby compliance with certain standards can be enforced.

IMPLICATIONS OF SELF MEDICATION

Self medication then, like the poor, we shall have with us always. The question confronting the medical profession is what attitude we shall take toward the problem. The natural impulse is to turn a deaf ear. But sincere medical men cannot so easily dodge responsibilities. In fairness to mankind we must first inquire into the evils, if any, that arise from self medication and, having discovered them, address ourselves to the task of minimizing these evils as much as possible.

I will not attempt either to justify or to condemn self medication. There are perhaps extremists on both sides of this question. Rarely do any of the ill effects of improper medication, even by physicians, ever appear under their proper labels, either in the morbidity or in the mortality reports. Undoubtedly many lives have been saved and much unnecessary suffering relieved by resorting to home remedies. On the other hand, every physician in active practice has very likely had experience with mistakes of self medication. "Too late" it may be when the patient seeks the physician's care. Or, if not too late, the doctor's task is often immeasurably increased because of costly delays and other forms of damage wrought by a misguided faith in "home remedies." It is ordinarily left to the doctor to take over after self treatment has been tried and found wanting, which may mean either an attempt to repair any damage which may have occurred or the signing of a death certificate. The physician no doubt feels that he has enough of his own mistakes to bury without assuming this duty for others.

Certainly the hazards would be much less if along with a conservative recital of the virtues that might be anticipated the purchasers of home remedies were told the unvarnished truth as to their therapeutic limitations. If persons are going to buy medicines for self administration, as is inevitable, then in the interests of life saving, to which all upright physicians must be committed, they should be served with reliable information on which to base mature judgment. This having been done, the individual becomes solely responsible for any evil consequences.

THE FEDERAL TRADE COMMISSION AND THE PHYSICIAN

The FTC has undertaken to enforce truthfulness in advertising of drugs and allied products in order to safeguard the public, as far as possible, against physical disasters born of false and misleading claims. In this connection the physician may be either an indispensable bulwark or a pernicious obstacle. Doctors indeed furnish strange paradoxes. Incredible as it may seem, the files of the FTC are replete with letters and other data from physicians attesting the virtues of all grades and shades of proprietary remedies. It is safe to say that there is no nostrum so rank as to be unable to

secure endorsement by some one authorized to affix an M.D. to his name. Medical endorsement of this character is the source of no great annoyance, as its scientific value can be readily challenged. A much more serious embarrassment arises from medical authorities whose published statements are either too old or too new. In the former classification are many erroneous conceptions that have been carried forward from medical antiquity and incorporated into recently published textbooks. At the other extreme are the new and unproved ideas of recognized leaders in contemporary medicine. Though an idea may be nothing more than a vague theory or hypothesis, it at once becomes legal tender provided it emanates from some one whose name "packs a wallop."

There is, happily, another side of the picture which much more truly characterizes the medical profession. Those who unwittingly or otherwise hinder progress represent a negligible minority. The true spirit of the medical profession is portrayed in that class of men who have on numerous occasions given unsparingly of their time and talent to render medical testimony, without compensation, when called on to do so by the FTC. Among these unsung heroes are not a few who have been known to refuse fancy fees for testimony contrary to their convictions, preferring instead to testify for the government along the lines which they knew to be scientifically honest. The FTC is proud to acknowledge the valiant support it has unfailingly received from the medical profession in the investigation of its most difficult and important cases.

In July 1939 an appeal was made to the secretaries of the state medical societies for assistance in securing medical witnesses if and when cases requiring this service were to be heard within their respective jurisdictions. The response was uniformly prompt and generous in spite of the fact that it was explained that the FTC is without funds with which to pay expert witness fees. It is generally realized, I believe, by any one who gives the matter a second thought, that the work of the FTC in attacking false and misleading drug advertising is a complement to the efforts of the profession itself in this field. The parallel activities of the medical profession and the FTC, therefore, may be properly regarded in the light of mutual assistance. Although a large proportion of the medical cases handled by the FTC are settled by voluntary agreement or stipulation, the Commission must be prepared in every single case to substantiate its complaints by competent medical testimony. It may therefore be truly said that medical testimony, either actual or potential, is the very backbone of every single case in this category. When falsehood and innuendo in this class of advertising become too distasteful to the physician he may take consolation in the thought that there is a way out of this wilderness, but he must at the same time realize that he or his kind will not only have to assist in blazing the trail but also lend a hand to the spade work.

Early Outbreaks of Bubonic Plague.—Plague can be traced back almost uninterruptedly to the third century before the Christian era, when Dionysius told of it as a fatal disease in Libya, Egypt and Syria, and Homer's story would carry us some 900 years farther back. There can be no doubt that the epidemic in Libya described at the beginning of the Christian era by Dioscorides, a Greek surgeon to the army in the time of Nero, and Poseidon, a physician of Alexandria, was true bubonic plague.—Scott, H. Harold: A History of Tropical Medicine, Baltimore, Williams & Wilkins Company, 1939.

CONFERENCES ON THERAPY

TREATMENT OF BLOOD DISORDERS

I. IRON THERAPY

NOTE.—These are actual reports, slightly edited, of conferences by the members of the Departments of Pharmacology and of Medicine of Cornell University Medical College and the New York Hospital, with the collaboration of other departments. The questions and discussions involve participation by members of the staff of the college and hospital, students and visitors. The next report will concern "Treatment of Blood Disorders: II. The Use of Iron and Other Metals."

DR. EUGENE F. DU BOIS: The conference today is the first of a series on the treatment of blood disorders. We hope that the plan of pursuing through several sessions a topic of limited scope will result in a more comprehensive discussion of the subject and perhaps also permit more time for informal discussion. We begin with iron therapy, and Dr. Warren will discuss the metabolism of iron with special reference to the red blood cells and hemoglobin.

THE METABOLISM OF IRON

DR. CHARLES O. WARREN JR.: We shall start by recalling the structure of the hemoglobin molecule, which, as you will remember, is made up of a "heme" part consisting of four substituted pyrrol groups and an atom of iron all linked together and combined with the protein globin. Apparently the body can synthesize the hemoglobin molecule from groups even simpler than the pyrrol nuclei, but under any ordinary conditions there is no lack either of these or of the constituents necessary for the synthesis of globin. Iron is more commonly the part of the molecule which is not present in adequate amounts in the diet, and we are concerned here with obtaining an understanding of the precise circumstances under which such a deficiency may arise. This should not imply that the body needs iron only for hemoglobin formation, for this element is an essential component of certain respiratory enzymes and other biologically active substances as well; but of the total iron in the body such a small amount is present in these forms that we can safely limit our discussion to the iron requirements of the body for hemoglobin formation.

I shall now merely enumerate some of the important points with respect to iron metabolism:

Iron is absorbed largely in the upper part of the small intestine. It is excreted almost entirely in the feces, though there is a very small loss in the urine. The iron in the stools represents that which has not been absorbed plus a fraction which may have been excreted into the intestine. The size of this latter fraction, and indeed its very existence, is by no means definitely established. It is clear however that, if normal males are kept for long periods of time on diets that contain very little iron, they excrete minimal amounts and appear to establish a balance between iron intake and excretion. The loss of iron from the body of normal males (but not females, as we shall see) as the result of endogenous metabolism is accordingly very small indeed and is covered by diets which are unusually low in iron.

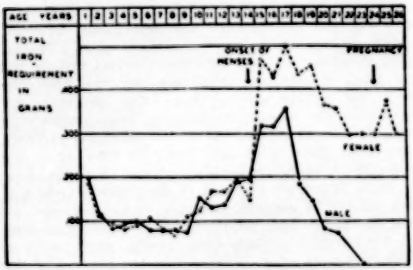
Iron in any form is utilized for hemoglobin synthesis. The most complete studies indicate that, when there is a demand for hemoglobin, injected iron is utilized nearly completely for its synthesis. Even hemoglobin

itself, if given parenterally, is utilized almost quantitatively, but if given by mouth very much larger amounts are necessary, it is so poorly absorbed.

Despite evidence to the contrary in the case of the dog and the rat, I think the evidence is good that in man ferrous salts are absorbed more readily than ferric salts or iron in any other form. This has been a source of considerable confusion. There appears to be no special virtue in organic combinations of iron in the diet.

Gastric acidity favors the preservation and even the formation of ferrous ions and also prevents the formation of insoluble iron compounds, particularly ferric phosphate. The importance of free hydrochloric acid in the stomach from the practical standpoint is questionable, however. Cases of hypochromic anemia associated with achlorhydria are not cured more readily as a rule by giving hydrochloric acid with the meals.

Iron is apparently transported in the plasma. This is a very small part of the total iron in the blood, and it represents a labile form of iron. It is comparable in iron metabolism to the blood sugar in carbohydrate metabolism; for example, on a high iron intake plasma iron will increase, and during active erythropoiesis, as



Iron requirement of human beings (Heath and Patek).

in recovery from pernicious anemia, the plasma iron will be lowered as it is withdrawn from the blood for hemoglobin synthesis.

Whether iron is utilizable for erythropoiesis by bone marrow in the form in which it is absorbed or whether the initial stages of hemoglobin synthesis occur in the liver is not known with certainty, although the latter view is generally held. Iron is not regarded as a bone marrow "stimulant."

The total iron content of the body is of the order of 4.5 Gm. Of this, the circulating hemoglobin contains somewhat less than 65 per cent; "latent iron" available for hemoglobin formation and stored principally in the liver, bone marrow and spleen comprises about 30 per cent, and tissue iron, which is unavailable for hemoglobin formation, about 5 per cent. The fact that of the total iron in the body about 65 per cent is circulating in the blood and that about half as much is available to supply more hemoglobin if necessary checks with the clinical experience that a patient can lose about half the circulating hemoglobin and replace it from the reserves without the necessity for iron administration.

The iron requirement of an individual depends primarily on two factors, age and sex, and because of this I think it is important to diagram the requirements for the different ages and sexes in man. The chart shown is reprinted from a review article by Heath and Patek in *Medicine*. The requirements have been calculated from data and assumptions stated in the original text.

The ordinate represents the annual iron requirement in grams, the abscissa the age in years. In infancy, after the first few months of life, the amount of iron that has to be added to the body decreases because growth is less rapid than initially, and at the age of about 4 years it reaches a steady level. This level means not that there is no additional requirement for iron but that the requirement is relatively constant at about 100 mg. a year. In adolescence the growth rate increases very rapidly, and during that period there is a large increase in the amount of iron that is necessary. With men, who reach adult size, we may assume, at about 21, the requirement then approximates zero since they lose so little of the iron which has already been absorbed into the body. This applies to normal men.

With women, on the other hand, the menstrual losses beginning in adolescence increase the requirement as compared with that of men. About 20 mg. of iron is required for each menstrual period, which represents the amount of iron lost in the blood of the menstrual flow. Growth falls off naturally, but the iron requirement owing to menstruation persists at the level of about 300 mg. a year until, say, the age of 45 years, when it too will decrease nearly to zero. Each pregnancy will constitute a special demand on iron metabolism which is only partially compensated by the amenorrhea, and a rise in the curve to nearly 400 mg. a year may be expected.

One can see from this chart at what ages one may expect to find iron deficiency anemias, namely during adolescence, when the chlorosis type of anemia used to be seen frequently, and in women of the age group from 20 to 45 years, particularly if numerous pregnancies have drained their stores of iron.

DR. DU BOIS: We could have a few questions at this point.

DR. PAUL REZNIKOFF: How does iron act? Why is it necessary in the body?

DR. WARREN: It is necessary in largest amounts as an integral part of the hemoglobin molecule, and it is its presence in the molecule that confers on hemoglobin the ability to transport oxygen. Hemoglobin iron is in the ferrous form, both in reduced and in oxygenated hemoglobin; the transportation of oxygen is therefore not associated with valence changes in the iron atoms. Much smaller amounts of iron are present in muscle hemoglobin and in the hemin respiratory catalysts, of which cytochrome is an example, but its action in the latter substances depends on its ability to be alternately oxidized and reduced—to alternate reversibly between the ferrous and ferric forms. A large part of the total oxygen consumption (cellular respiration) of most body cells depends on this catalytic action of iron. In view of its importance in the cell economy, it is not surprising to learn that iron in this form is retained in the cells even when there is an excessive demand for hemoglobin iron. The same is true of muscle hemoglobin.

DR. EPHRAIM SHORR: Does infection do anything to iron metabolism?

DR. WARREN: It has been found that cases of iron deficiency anemia do not respond well to iron therapy during a coexisting infection. This poor response is ordinarily interpreted as due to a "toxic" condition of

the bone marrow, but in order to establish this it would be necessary to show that iron absorption is not affected by the infection, and so far as I know such studies have not been made.

DR. SHORR: What do you mean when you say that the iron requirement in the adult male approximates zero?

DR. WARREN: Theoretically, if there were no iron loss there would be no need for iron in the diet. Actually, there is a very small but continuous loss of iron in the urine and there may also be a small excretion into the intestine. But these losses are apparently made up even with diets designed to contain as little iron as possible.

DR. DU BOIS: But that will not even let you cut your finger, will it?

DR. WARREN: That is true, and a good sized nosebleed would constitute a real setback.

DR. WALTER MODELL: If a man does not excrete any iron after the age of 25, what happens to all the iron he ingests in his diet?

DR. WARREN: After he has built up his reserve supply of iron he comes into iron balance. He excretes an amount equivalent to that which he ingests.

DR. DU BOIS: Have you in your head the approximate figure as to how many pregnancies a woman could have on an iron deficient diet without exhausting her reserves of iron?

DR. WARREN: Heath and Patek give 375 mg. as an approximate figure representing the iron requirement for a pregnancy. Taking 1.3 Gm. as the reserve iron in the body available for hemoglobin formation, this would be pretty well exhausted by three or four pregnancies if none was absorbed from the diet during this time.

DR. MCKEEN CATTELL: Is there definite evidence that those iron reserves are drawn on when there is need in relation to the hemoglobin supply?

DR. WARREN: Yes, as I say, it is common experience that patients can lose practically half the hemoglobin in the blood and then restore their blood hemoglobin level on an ordinary diet without the addition of iron.

DR. HARRY GOLD: There is also the fact that iron is of no value in acute hemorrhage but is of value in chronic hemorrhage, when the reserves are presumably exhausted.

DR. CATTELL: Is there no way of getting at the level of those reserves in the patient? The information would be useful as an indication of the existing factor of safety in relation to the likelihood of anemia developing.

DR. WARREN: There is no practical way for patients.

DR. REZNIKOFF: That work has been done on animals; the organs have been analyzed under various conditions of iron depletion, and it has been definitely shown that iron stores are drawn on to replace the acute hemoglobin loss in hemorrhage.

DR. GOLD: Do I understand rightly that iron deficiency anemia does not result in a man when his diet is free of iron?

DR. WARREN: It has not been practical to test this point directly by placing individuals for prolonged periods on diets that are entirely free of iron, except in starvation experiments. In these cases there is a negative iron balance but this is interpreted as due to the breakdown of tissue cells. Certainly it is true that "idiopathic hypochromic anemia" is a disease of women and that men with hypochromic anemia are almost invariably found, on careful history and examination, to be suffering from some condition other than a mere insufficiency of iron in the diet. At any rate, the statement occurs in the literature that iron deficiency anemia cannot be produced in the normal adult who has no blood loss whatever.

DR. WILLIAM H. SUMMERSON: That, of course, is open to a good deal of experimental criticism.

DR. DU BOIS: I wonder if you would care to discuss that further.

DR. SUMMERSON: I have made some calculations from the chart Dr. Warren has shown, in which the iron requirement drops down to zero. That would be based, of course, on a study of iron intake. If a human being is put on a milk diet I think most people would admit he is under the condition of absolute minimum iron intake with otherwise adequate amounts of the various components of the diet. The iron content of milk is variable, but I should say it is about 0.5 mg. per liter. Suppose a person drinks 2 quarts of milk a day for a year: he is getting in each 2 quarts of milk 1 mg. of iron, and over a period of a year he is getting 365 mg. of iron. That will introduce an element of uncertainty with regard to the absolute minimal amounts of iron that I think would completely nullify the value of this type of study. I don't know whether that was taken into account when that chart was constructed, but it seems to me that an absolute minimal annual intake of iron amounting to 365 mg. of iron would preclude the possibility of saying that the adult human being does not require any iron.

DR. WARREN: That statement was based on the fact that, when patients were placed on as low an intake of iron as could reasonably be given, the lowest being 0.9 mg. a day, no negative iron balance could be demonstrated. They excreted just as much iron as was consumed in the diet.

DR. SUMMERSON: But those facts practically nullify the conclusion indicated by the chart.

DR. WARREN: One must remember that the patient has to be kept in nutritional balance in other respects than iron and that, if a person is starved, then there is a negative iron balance. But the iron excreted under those conditions apparently comes from tissue cells that are broken down and utilized for food during starvation. I think, however, the point you make is well taken, that actually the critical experiments have not been done to establish an absolute zero requirement.

CLINICAL ASPECTS OF IRON THERAPY

DR. DU BOIS: We will go on to the second part, "Clinical Aspects of Iron Therapy and the Choice of Preparations," by Dr. Reznikoff.

DR. PAUL REZNIKOFF: The use of iron in anemia has been clarified to a considerable extent by recent work, but unfortunately the profession at large is still somewhat in the dark as to when to use iron or, more correctly, when to expect an alleviation of the anemia from the use of iron.

Dr. Sabin, in an article on the bone marrow in *Physiological Reviews*, has traced the development of the red blood cell from its earliest stage in the bone marrow to its entrance into the blood stream. At the time when the red blood cell is introduced into the

circulation, the hemoglobin content is at a maximum; this suggests that the amount of hemoglobin in the red blood cell is a factor in determining when the cell is old enough to carry out its functions. In the anemias caused by iron deficiency the problem is to provide the red blood corpuscle with an adequate supply of hemoglobin; and, as Dr. Warren has shown, in most cases that means iron.

When is iron therapy indicated? The answer is, whenever there is a deficiency of iron. Clinically there are relatively few conditions in which iron deficiency occurs, but those few are important. In the first place a deficiency results if iron is lost from the body, as in conditions characterized by chronic hemorrhage. Normally the iron in the blood which is released by disintegration of the red blood cells is used again by the bone marrow; but when there is bleeding a certain amount of iron is lost to the body economy and there is a nutritive defect in the bone marrow so far as iron is concerned. In the second place there is a deficiency if the supply is inadequate. As Dr. Warren has pointed out, the supply is deficient whenever the intake is not high enough to keep the person in positive balance. It stands to reason that, if a child is growing, the child needs iron; if a woman is losing iron through menstruation she needs iron more than if she did not menstruate; and if a woman is pregnant and is supplying iron to the fetus she needs more iron than before she was pregnant. So in the last analysis the question as to whether the intake is inadequate depends entirely on the demand.

That brings up your question again, Dr. Gold, as to whether an iron deficiency anemia could be produced by cutting down on the iron intake of a man who had no hemorrhages. Under those conditions a negative iron balance is rarely observed, and anemia characterized primarily by iron deficiency hardly ever occurs. What is the evidence for that? In Bellevue Hospital we have patients who have been living on coffee and rolls, or coffee and doughnuts, for one, two, three or more years. They come into the hospital with a deficiency disease, such as pellagra or scurvy, but they have practically no anemia. Although they have been on a low iron intake for a great many years, they have very little iron deficiency. So iron deficiency due to faulty ingestion is present only when there is also an increased physiologic demand for iron. Thus the usual clinical types of iron deficiency anemia are the anemias seen in growing children, menstruating women, pregnant women and bleeding patients. An iron deficiency anemia is described in women of the menopausal age, but as Heath and Patek have shown, if those patients are examined carefully they are found almost invariably to have some blood loss.

Should iron be given in acute hemorrhage? As an emergency measure it is certainly not indicated, because in acute hemorrhage there is loss of blood volume and fall in blood pressure, and the problem is really that of circulatory shock. As a matter of fact, it has been shown that after sudden hemorrhage in an otherwise normal person who has sufficient stores of iron, it is not really necessary to give iron at any time. After the hemorrhage has stopped, within a period of several weeks to several months, the red blood cells and hemoglobin will gradually attain their normal level. Iron administration in chronic hemorrhage is of course another matter.

Are there any other conditions in which iron should be given? Well, it is used in almost every type of anemia; in fact, most physicians give iron whenever a patient is anemic, and some even use it in pernicious anemia, I think, for no very good reason. Patients who are anemic as the result of chronic infection often receive iron, but this cannot be justified because there is no increase in iron utilization in these cases until the infection subsides, in all probability, because of the depression of the bone marrow. The same is in general true of neoplastic diseases. However, iron sometimes does prove useful in neoplastic disease but that is only when there is chronic hemorrhage in addition to the neoplasm. Again, in chronic nephritis iron is of no use because in this condition there is evidence that we are dealing with a depressed bone marrow, and the only function of iron therapy would be to replace the iron lost in the red blood cells in the urine.

There is a type of anemia called idiopathic hypochromic achlorhydric anemia, which practically always occurs in women. Nearly all give a history of excessive menstrual bleeding, so it is merely the same problem of a loss of blood producing an iron deficiency anemia. But there are undoubtedly a few patients who show but little evidence of blood loss—in fact there may be scanty menstruation—and who still have anemia. Those few patients apparently do well if hydrochloric acid is added to the iron therapy, and they will also have to receive larger amounts of iron than are effective in the ordinary, so-called "iron deficient" person. These cases represent only a small proportion of the patients with so-called idiopathic hypochromic achlorhydric anemia; I want to stress the fact that they are rare. The majority of patients with the achlorhydric type of anemia will absorb iron perfectly well without addition of hydrochloric acid.

I should like to bring up this question of hydrochloric acid now. You may well ask: If hydrochloric acid plays an important role in the absorption of iron, why do not pernicious anemia patients with achlorhydria have iron deficiency anemia? We know they don't. From this we must conclude that only a small proportion of patients with low gastric acidity need hydrochloric acid to facilitate the absorption of iron.

When we give iron how do we know it is effective? By changes in the red blood cell count, in the amount of hemoglobin and also in the reticulocyte count. These changes may be charted as the so-called biologic curve of iron response. Incidentally, the curve is the same for the response of the blood to the administration of liver in pernicious anemia. I should like to illustrate this response by the following experiment: A rat born of a mother which has been on a milk diet for a long time is weaned and put on a milk diet. At birth the rat's blood shows about 3,400,000 red blood cells per cubic millimeter and a little over 6 Gm. of hemoglobin per hundred cubic centimeters. As the young rat continues on the milk diet, the anemia increases, and down go the red count and the hemoglobin percentage, but the reticulocyte count, which is relatively high in the rat, persists at a fairly definite level of between 20 and 25 per cent. However, if iron is given after about the fourth day there is a rise in reticulocytes, which reaches its peak between the fifth and tenth days; this peak may be as high as 40 per cent. The red cell count and hemoglobin begin to rise rather rapidly, so that about three weeks after the beginning of iron therapy, in this case 1 mg. of iron a day, the red cell count and hemoglobin are nearly normal. That is the usual response to iron administration.

How can one tell that iron therapy is going to prove effective? It takes at least two or three weeks to get a really good rise in red cells and hemoglobin. Within a few days after starting the administration of iron, one should follow the reticulocyte count closely, since it early gives a clue as to whether iron therapy will be effective. A rise in the reticulocyte count is always followed by a rise in the level of the red cells and hemoglobin. Furthermore, there is an inverse ratio between the initial hemoglobin level and the reticulocyte peak; in other words, the lower the initial hemoglobin the higher the reticulocyte peak will be within a week after the onset of iron therapy. For example, if a patient has a hemoglobin level of 3.1 Gm. to begin with, one may expect a reticulocyte count of 13 or 14 per cent at the time of the peak; and if the patient starts with a fairly high hemoglobin of 9.3 Gm., the reticulocyte count would be expected to rise only to about 5 per cent. The reticulocyte response is reliable and early evidence hematologically of the impending efficacy of iron therapy. Those types of hypochromic anemia which fail to improve with iron therapy (cases with infections, nephritis, cancer) also fail to show a reticulocyte response to the administration of iron.

How much of a hemoglobin rise can we expect? Here again the rise is inversely proportional to the initial hemoglobin value. If the patient has an initial value of, let us say, 7.5 Gm., which we call 50 per cent of normal, or less than that, we should expect an increase during a three weeks period of an average of at least 1 per cent of hemoglobin daily. In some cases the rate of increase is as high as 2 per cent a day, depending on the dosage of iron and the type of iron used, as I shall show presently. If, on the other hand, the hemoglobin is above 50 or 60 per cent, one would be satisfied with an increase of about 0.5 per cent of hemoglobin a day measured over a three weeks period. These figures are fairly accurate. It is surprising perhaps that the rate of hemoglobin increase should be so mathematical because a considerable proportion of the iron administered may not be transferred directly into hemoglobin but may be stored. The only time you get a quantitative conversion of the entire dose of iron into hemoglobin is when you give it parenterally to patients with anemia. This procedure is unpractical, unnecessary and undesirable in nearly all cases.

THE CHOICE OF PREPARATIONS

Before we take up the relative merits of the different iron products, I want to show you some data assembled from our own clinical studies and those of others, which give some idea of this problem.

Table 1 shows a group of iron products. It does not by any means cover all the different kinds, but there is represented a ferric product, iron and ammonium citrates, and several ferrous products. One type which I have not included is reduced iron, which is metallic iron. I should like to point out that the things one has to take into account in judging the efficacy of an iron preparation include the route of administration, the dosage of iron, the initial hemoglobin level, whether above or below approximately 50 per cent, and the average daily hemoglobin rise over a period of three or four weeks. In most cases after about thirty days of treatment one can calculate the percentage of the iron administered which has been converted into hemoglobin. You see in the table that for the iron and ammonium citrates only about 2 per cent of all the iron given has been converted into hemoglobin. If you examine some of the ferrous compounds you observe a much larger percentage utilization of iron. Certain ferrous products regularly yield more than 15 per cent utilization. Of course, the greater the dosage the less the percentage utilization; that is obvious because most of it is excreted in the feces. So when only 108 mg. of iron a day was given as ferrous gluconate, the utilization was 37 per cent; but when the dose was doubled the utilization was 17 per cent, or not quite half.

What preparations of iron do we use? Ferrous sulfate, in the form of 0.18 Gm. tablets, is the one we use most frequently in this institution. Each tablet contains between 60 and 65 mg. of iron. Then we have the ferric salt, iron and ammonium citrates, which is put up either in capsules or in 50 per cent solution. We have also a great array of products put up in solutions and in pretty looking pills. There is one which is nothing but ferrous sulfate, a little more expensive because it is pink; and there is one combined with a copper salt, which capsule should not be on the market as an adult medicine. Then we have a product which

TABLE 1.—*Relative Efficacy of Various Iron Compounds**

Compound Used	Daily Iron Dosage, Gm.	Initial Hemoglobin, per Cent	Number of Cases	Average Daily Hemoglobin Rise, per Cent	Average Time Before Hemoglobin Rise, Days	Utilization of Iron, per Cent
Ferrous sulfate	0.180	<50	12	1.175	20	15.70
Ferrous sulfate	0.120	>50	3	0.650	33	13.00
Iron and ammonium citrates	1.215	<50	30	1.270	..	2.50
Iron and ammonium citrates	1.215	>50	3	1.030	..	2.03
Ferrous carbonate	0.110	<50	6	0.955	..	20.80
Ferrous carbonate	0.110	>50	3	0.530	..	11.30
Ferrous carbonate	0.220	<50	8	0.805	..	8.80
Ferrous carbonate	0.220	>50	1	0.180	..	1.96
Ferrous carbonate	0.330	<50	10	1.125	..	8.18
Ferrous carbonate	0.330	>50	3	0.940	..	6.84
Ferrous chloride	0.132-0.198	<50	4	1.420	..	20.70
Ferrous chloride	0.132-0.198	>50	3	1.000	..	14.50

* 14.5 Gm. = 100 per cent hemoglobin.

is supposed to contain vitamin B_1, for no good reason at all in my opinion.

Why use ferrous salts? In the first place, as you have heard, the ferrous iron is better absorbed. In the second place, which is very important clinically, it is more easily tolerated in most cases. It does not upset the gastrointestinal tract so readily. Patients receiving iron are apt to complain of vague distress or "indigestion," diarrhea or sometimes constipation. In general the ferrous salts tend to cause less irritation than the ferric.

What about the dosage of iron? I think it is wise in giving a drug which may upset the patient to follow this principle: Start with a small dose and build it up gradually. For example, I plan to give ferrous sulfate, and I want to give the patient nine tablets, that is, about 560 mg. of iron, a day. Instead of starting with three tablets after each meal, I have the patient take one tablet after each meal, and then increase by one tablet a day, so he gets 1-1-1, 2-1-1, 2-2-1, 2-2-2 until the intake reaches 3-3-3, that is, three tablets after each meal. That I think is a good general plan.

Should iron ever be given by injection? Well, "ever" is a big word. I don't know. I should say that I have never myself seen a case or heard of a

case in which iron should be given by injection. Iron has to be given over a long period of time, for about a month at least. Suppose you stick a needle into a patient every day for a month. Although you will all agree it is not pleasant, you will say it is being done constantly with insulin and epinephrine. But the case of iron salts is different: Here you are giving a product which may be quite irritating and may cause necrosis. Even the ferrous compounds, which are relatively nontoxic, may be irritating under some conditions. Furthermore, there is practically no contraindication to giving iron by mouth, and even patients who have ulcer, or colitis with diarrhea, can take it in this manner. If anything, iron is a styptic, and there should be no hesitation in giving iron by mouth even in a case of bleeding gastric ulcer; at least, I don't hesitate to give it, and I am sure that most physicians feel there is no danger entailed.

I want to speak briefly about the measures for promoting the absorption and utilization of iron. We have mentioned the administration of hydrochloric acid and certain qualifications regarding its use. Then there is the question of other metals, which we shall discuss at length later, but I should like to say here that copper may aid in the utilization of iron under certain special conditions, at least so far as infants are concerned. Practically, it is unimportant because we get all the copper we need in our food, and even as impurities in iron. The liver extract made by Whipple, which is precipitated in 70 per cent alcohol, apparently has an effect in increasing the formation of hemoglobin. How it acts, we don't know. This is not the same product that is used in pernicious anemia. It may also be noted that bile pigment and chlorophyll have been recently shown to aid materially in the production of hemoglobin.

TABLE 2.—*Percentage of Iron Appearing as Hemoglobin Iron Compound*

	Daily Dose	
	400 Mg.	40 Mg.
Ferrous sulfate	4.7	29.0
Ferric ammonium citrate, green	4.5	28.0
Ferric citrate scales	5.5	32.0
Reduced iron	3.7	24.5

What about food iron? You will read lists of iron-containing foods such as cocoa shell, tea leaf, dried yeast, cocoa as purchased, apricots, egg yolk, liver, oatmeal and spinach, but who wants to eat tea leaves and coffee grounds? One needs to know not only the percentage of iron in these foods but how much iron there is in a portion of food that the patient eats. If you calculate the absolute quantity of iron in an average portion ingested by the patient, then the list of foods runs in a slightly different order: fresh liver, fresh spinach, dried apricots, boiled chicken, fresh lamb, egg yolk, tuna fish, canned and dried prunes, lean beef, canned tomatoes and oatmeal. When you want to prescribe a high iron diet you must determine how much of a particular food the patient is going to eat.

DISCUSSION OF QUESTIONS

DR. DU BOIS: We are now ready for questions.

DR. GOLD: Does iron ever cause an increase in hemoglobin without showing a reticulocyte response first?

DR. REZNIKOFF: I cannot answer that question because in the majority of cases reticulocyte counts are not performed. There are a few cases of pernicious anemia which with liver extract therapy show good red blood cell formation without any reticulocyte response to speak of. Those cases of iron deficiency anemia which we have studied carefully and in which we have done daily reticulocyte counts have always shown a rise in reticulocytes, but fewer patients with iron deficiency anemias have been studied in this way than with pernicious anemia.

DR. JANET TRAVELL: I should like to return to the question of the relative effectiveness of ferrous, ferric and metallic iron. I wonder whether the behavior of animals and of human beings is fundamentally different with respect to the various forms of iron. I noticed in table 1 that the dosage of the ferric salt, the iron and ammonium citrates, was from four to ten times greater with respect to the amount of iron that was given than for any of the ferrous salts. In this connection the figures are of interest that were obtained by Whipple and Robscheit-Robbins in their experiments on standard dogs rendered chronically anemic by repeated bleeding. This is the best experimental subject which we have had for the purpose of studying iron deficiency anemia. They found that the percentage of iron appearing as hemoglobin on large and small dosages of iron given by mouth was as shown in table 2. They concluded that all forms of iron are utilized with equal facility by the dog to produce hemoglobin. The determining factor is the dose of iron. This applies not only to iron salts but also to most forms of food iron.

The clinical studies are the ones that are quoted as showing that ferrous iron by mouth is better utilized than ferric iron, and in these studies as a rule equal amounts of iron in the ferric and ferrous forms were not given. When relatively larger quantities of ferric than of ferrous iron were used, the consensus was that no significant difference in the results of the two forms of iron therapy as to blood regeneration was obtained. In all these studies the dosage of iron is relatively large, and it is quite likely that a maximal hemoglobin response was obtained with both forms of the metal. There is a paucity of clinical studies in which identical amounts of iron are given in the ferrous and the ferric forms. A study recently reported by Schlutz, Morse and Oldham was carried out with anemic infants to whom was given 100 mg. of iron either as ferrous sulfate or as ferric and ammonium citrates; when equal amounts of iron were given under identical conditions the ferrous was found to be no more efficacious than the ferric salt. The experiments of Moore and his collaborators seem to point in the opposite direction, namely that ferrous iron is better absorbed than ferric iron. They suggest, however, that diarrhea might occasionally interfere with the absorption of the more irritant ferric salts.

DR. GOLD: May I just mention the fact that Dr. Reznikoff's table seems to me to afford a good basis for the inference that there is no difference in the utilization of ferric and ferrous iron. When 1.2 Gm. of iron was given as ferric ammonium citrate about 2 per cent was utilized, or 24 mg. of iron. When 330 mg. was given in the form of ferrous carbonate, as much as 8 per cent was utilized, or 26 mg. of iron; when a smaller dose of ferrous carbonate was given, 110 mg. of iron a day, as much as 20 per cent was utilized, or 22 mg. of iron. The fact that substantially the same absolute amount was utilized when different amounts were presented to the body indicates that in all cases the doses were probably much too large and

if a difference did exist in the power of the body to utilize iron from these different sources, these experiments would fail to show it. Don't these figures bear out what Dr. Travell has just said?

DR. TRAVELL: As a basis for comparing the effectiveness of the different iron products, the absolute amount of iron rather than the percentage of the dose utilized for new hemoglobin would seem to be the best criterion.

DR. REZNIKOFF: One thing known from clinical experience is that if you do not give large doses of ferric iron, from 1 to 1.5 Gm. of iron a day, you get practically no results. When we used to give from 100 to 250 mg. of iron as reduced iron or as the ferric salt, we got little hemoglobin response, whereas with no more than 500 mg. of ferrous iron a day we obtain satisfactory utilization. In other words, the trouble with ferric salts and with reduced iron is that the dose in man must be considerably greater than with ferrous iron. In the old days when chlorosis was treated with very small doses of iron it was fortunate that ferrous carbonate was used. Then the dose of iron was 5 mg., and good results were obtained, but it was a ferrous salt.

DR. CATTELL: To complete the discussion of the relative effectiveness of ferrous versus ferric salts, I should like to bring up one more point, that is whether the ferric salt would not be converted into the ferrous form before absorption, since iron is largely absorbed in the duodenum, and whether that might not be an answer to the question.

DR. REZNIKOFF: I think most people agree that no iron is absorbed until it is changed to the ferrous state. That is my impression from the literature.

DR. CATTELL: Under those circumstances does it still make sense that from a therapeutic standpoint the ferric iron should be less effective than the ferrous iron?

DR. REZNIKOFF: From the standpoint of animal experiments it is obviously not less effective, but as I have said when we give very small doses of ferric iron to patients we get little rise in hemoglobin.

DR. TRAVELL: Isn't it true that there may be considerable variation in the response to iron therapy and that some hypochromic anemias fail to respond to relatively small doses even of ferrous iron? Fullerton reported that not all of his cases of hypochromic anemia responded to treatment with ferrous sulfate.

DR. REZNIKOFF: How big was the dose?

DR. TRAVELL: About 150 to 250 mg. of iron.

DR. REZNIKOFF: That is a relatively small dose. Most of us try to give 500 mg. to the adult anemic patient, but we have had excellent responses with as little as 100 mg. of iron a day. On the basis of Minot's figures and our own experience, I am sure that 500 mg. of iron in the form of ferric iron would not cause very much rise in hemoglobin. You have to run the dose of ferric iron up to almost 1 Gm. a day. Practically, the whole question is not very important because we have a cheap form of iron in ferrous iron. We know that it upsets patients much less and that a smaller dose is effective.

DR. TRAVELL: That is true.

DR. CATTELL: I wonder, Dr. Reznikoff, whether it would not be worth while to have a little further discussion of your criteria of dosage and what factors lead you to increase the amounts given. If you do not get the expected response from the routine dose, do you increase the amount; and if so, to what extent?

DR. REZNIKOFF: It is hard to answer that without taking an individual case. Let us suppose we give a patient 500 mg. of iron a day as ferrous sulfate, and, if she has achlorhydria, we give her hydrochloric acid too, 4 or 5 cc. with each meal. If she does not respond within an adequate time, certainly within three weeks and probably within two weeks, I should try to increase the dose at least 100 mg. of iron a day, probably more.

DR. GOLD: Up to what dose would you go?

DR. REZNIKOFF: Up to the limit of tolerance; in other words, until she begins to get some gastrointestinal upset. I have rarely reached the limit of tolerance, so I do not know what that is except as determined by the individual case.

DR. CATTELL: What dose do you consider adequate for a therapeutic test?

DR. REZNIKOFF: The majority of patients with iron deficiency anemia should respond to about 500 mg. of iron a day in the form of ferrous sulfate. That would be adequate for most patients.

DR. CLAUDE E. FORKNER: I think Heath and his associates stated that the optimal dose for the average adult patient with iron deficiency anemia was 0.8 Gm. of ferrous sulfate daily. In some cases much smaller doses will be effective, in others larger; but that was considered by Heath to be the optimal dose, and that was equivalent to about 6 Gm. of iron and ammonium citrates a day.

SUMMARY

DR. DU BOIS: We can see from the discussions that the subject of iron therapy involves many controversial issues and that to some of the fundamental questions there are no positive answers. Certain points concerning the metabolism of iron are of direct importance in therapy. About 30 per cent of the body iron is present as reserves and this is called on to restore a deficiency in the circulating hemoglobin. After an acute hemorrhage, therefore, iron administration is of little or no value because the body first calls on these stores. When they are used up, as in the case of chronic hemorrhage, iron therapy becomes efficacious in speeding up hemoglobin formation. The discussion has brought out the fact that in the course of normal metabolism of the adult male the loss of iron seems to be negligible. An iron deficiency in the male, therefore, suggests that some form of bleeding must be taking place. It is for this reason that iron deficiency anemias are much more common in females, who lose about 20 mg. of iron with each menstrual period and about 375 mg. of iron with each pregnancy. The experience appears to be that infection reduces the efficacy of iron therapy in restoring deficiency in hemoglobin, but the exact nature of the injury by infection is not understood. We have discussed the question of the value of hydrochloric acid in iron therapy. It is rarely necessary, although some patients appear to require hydrochloric acid to facilitate the utilization of iron. Patients with pernicious anemia have achlorhydria but are not likely to suffer from iron deficiency, while some patients with hypochromic anemia appear to regenerate hemoglobin faster when hydrochloric acid is given together with the iron therapy. We have had a discussion of the question of whether ferrous or ferric salts are superior in the treatment of anemia. There seems to be no complete agreement. There is some good evidence that ferrous salts are better utilized than ferric salts, but some of the

evidence on that point is open to criticism and in some of the studies the clinical efficacy of the two seems to be the same. If there are differences in the utilization of ferrous and ferric salts, it may be that their significance is largely lost in treatment, the doses of iron are so big by comparison with the amounts that are utilized. We need to keep an open mind on this question. There seems to be agreement that iron therapy should be given by mouth and that parenteral administration is rarely necessary. A plan for the use of iron in the treatment of anemia has been outlined. Adequate doses such as 500 mg. of iron a day to adults are likely to be associated with a reticulocyte response. This serves as an index of satisfactory reaction to iron therapy.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

VITAMIN E HAS BEEN CLAIMED TO BE OF VALUE IN THE TREATMENT OF A NUMBER OF VARIOUS DISORDERS, PARTICULARLY WITH REFERENCE TO ITS ALLEGED USEFULNESS IN HABITUAL ABORTIONS. THE COUNCIL ADOPTED THE FOLLOWING REPORT, WHICH WAS PREPARED FOR IT BY THE REFEREE, AND AUTHORIZED PUBLICATION.

PAUL NICHOLAS LEECH, Secretary.

THE TREATMENT OF HABITUAL ABORTION WITH VITAMIN E

Several clinical observers have presented evidence within the last eight years that the administration of vitamin E may enable women who have had repeated abortions to give birth to living children. This evidence, on superficial examination, appears to be good. It is my chief purpose in the present report to subject the evidence to critical examination.

Vitamin E has also been used in the treatment of other disorders of the reproductive organs and of lactation in women.[1] As it seems possible that claims might be made for such uses of vitamin E, it becomes necessary to consider what evidence there is in support of the claims.

VITAMIN E IN THE TREATMENT OF VARIOUS DISORDERS

Involuntary Sterility in Women.—There is no convincing clinical evidence that the administration of vitamin E (wheat germ oil) will enable women with involuntary sterility to conceive (table 1).[2]

Disorders of Menstruation.—Juhász-Schäffer [3] stated that he had administered vitamin E in 150 cases of dysmenorrhea without definite results. Shute [4] states that he has relieved patients with dysmenorrhea provided their blood showed an increase of estrogenic substance, but he gives no other details.

Toxemia of Pregnancy.—Barrie [5] claims to have produced "toxemias of pregnancy" in rats fed diets low in vitamin E. The incidence of toxemia was higher (19 per cent) in animals partially deficient than in those wholly deficient (1.7-2 per cent) or in those receiving adequate amounts of vitamin E (2 per cent). Lesions were found in the liver and kidney resembling the lesions in women with toxemia. Shute [6] found evidence for vitamin E deficiency in only one of eight women with toxemia.

Faulty Lactation.—Shute [7] administered wheat germ oil during pregnancy to sixty women considered by him to be deficient in vitamin E; sixteen of these had an unusually abundant secretion of milk for from seven to ten days after parturition; five had scanty secretion; thirty-six were able to nurse their infants for at least three months. Of sixty women who were considered not to be deficient during pregnancy, seven had an unusually abundant secretion of milk, eighteen had a poor secretion and thirty-five were able to nurse for more than three months. Of twenty-three women who could not furnish more than 4 ounces (120 cc.) of milk a day, fifteen had had wheat germ oil during pregnancy. Lactation of six of the fifteen women followed the further administration of wheat germ oil. Two of the eight who had not had wheat germ oil until after delivery had successful lactation following the administration of wheat germ oil.

Vaginal Pruritus.—After the menopause, according to Shute,[4] vaginal pruritus may be associated with excess of estrogenic substance in the serum. He has reported four cases in which relief followed the use of large daily doses of wheat germ oil.

TABLE 1.—*Use of Wheat Germ Oil in Treatment of Involuntary Sterility*

Author	Date	Number of Cases		Daily Dose
		Total	Successful	
Vogt-Möller [2]	1933	5	3	3 Gm.
Watson and Tew [2]	1936 (2d paper)	15	9	4 cc. and more

TABLE 2.—*Expectation of Pregnancy Based on Number of Successive Abortions*

Number of Successive Abortions	Number of Cases	Calculated Number of Cases with Abortions According to		Expectation of Pregnancy, per Cent
		Malpas	Author	
1	180	180	180	100
2	43	39	39	86
3	21	15	16	63.4
4	7	11	9	45.5
5	6	10	6	31.5
6	4	10	4	21.7

The formula of Malpas was modified by including the numerical factor which gives the probability of the occurrence of pregnancy.

While the results in case of deficient lactation and in vaginal pruritus are suggestive, it is obvious that much more observation and many more reports from other workers are needed before any claim can be permitted for the value of vitamin E in their treatment.

Before considering the use of vitamin E for the prevention of "habitual abortion," it is necessary to call

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3. Juhász-Schäffer, A.: Das E Vitamin, Ergebn. d. inn. Med. u. Kinderh. **45**: 129, 1933.

4. Shute, Evan: Vaginitis and Vulvitis Associated with an Excess of Estrogen in the Blood, J. A. M. A. **110**: 889 (March 19) 1938.

5. Barrie, M. M. O.: The Effect of Vitamin E Deficiency in the Rat, J. Obst. & Gynaec. Brit. Emp. **46**: 49 (Feb.) 1939.

6. Shute, Evan: The Early Diagnosis of Abruptio Placentae and Its Treatment with Wheat Germ Oil, Am. J. Obst. & Gynec. **33**: 429 (March) 1937.

7. Shute, Evan: Wheat Germ Oil Therapy: III. Rat Experiments, Lactation, Clinical Uses, "Failures" and Effects upon Congenital Anomalies, Am. J. Obst. & Gynec. **35**: 810 (May) 1938.

attention to the frequency of occurrence of abortions of all types, to the difficulties which naturally exist in ascertaining the frequency of occurrence of the various types of abortion—spontaneous and induced—and, finally, to the lack of published statistics on the frequency of "habitual abortion."

Taussig [8] states that 2,400,000 living infants are born in the United States each year and estimates that in each year 682,000 abortions occur. It is impossible to ascertain with any certainty how many abortions are spontaneous and how many are induced. Plass,[9] analyzing the replies of eighty-one Iowa physicians to a questionnaire, found that, while 51,000 deliveries occurred, there were 10,000 abortions, of which 76 per cent were induced. Brunner and Newton [10] report that 3,216 women had 10,609 pregnancies with 2,897 abortions, of which 42 per cent were induced. Simons [11] reports that 40.6 per cent of 995 abortions treated in the hospital were induced. Kopp [12] has published an analysis of 10,000 case histories of women studied by the Birth Control Clinic Research Bureau of New York City. She believes that the number of induced abortions acknowledged by these women is probably too low but is likely to be nearer the truth than in the case of women entering the hospital for obstetric treatment. It should be pointed out, however, that many of the women sought advice for contraception, a fact which might indicate previous more or less successful attempts at abortion. Kopp found that 9,583 women had had 38,985 pregnancies, resulting in 11,172 abortions, of which 72 per cent had been induced. Whitehouse [13] in England reports that 3,000 women had had 11,430 pregnancies with 17.2 per cent abortions. He did not attempt to ascertain how many of the abortions had been induced. The data of the American authors just quoted show that about 28 per cent of all pregnancies terminate in abortion and that of 25,064 abortions 65 per cent were induced; therefore 9.8 per cent of all pregnancies resulted in noninduced abortion. Possibly about 240,000 noninduced abortions occur each year in the United States. Unfortunately the American reports fail to give adequate details regarding the frequency of repeated abortions.

Habitual abortion is defined by Bishop [14] as premature delivery on more than one occasion before the fifth month of gestation not due to discoverable disease, organic cause or artificial induction. He found habitual abortion in only eleven (0.41 per cent) of 2,687 pregnant women. Malpas [15] believes that repeated abortion may occur in 1 per cent of all pregnancies. Taussig [8] and Kopp [12] make no estimate of the frequency.

Taussig states (p. 102) in regard to the etiology of spontaneous abortion: "In this country, where all the needed constituents of a well balanced diet are obtainable, dietary deficiencies probably do not play a very great part in abortion, except in domestic animals." This view is beyond doubt the prevalent one. The recent publication of a number of observations claiming the cure of repeated abortion by treatment with wheat germ oil therefore deserves critical analysis.

If the effect of measures proposed for the prevention of repeated abortion is to be studied critically, it is necessary to have a definition of repeated abortion and

TABLE 3.—*Frequency of Abortion* *

	2 Pregnancies			3 Pregnancies			4 Pregnancies			5 Pregnancies			6 Pregnancies		
	N	Frequency		N	Frequency		N	Frequency		N	Frequency		N	Frequency	
Abortions	219	Obs.	f1	172	Obs.	f1	136	Obs.	f1	95	Obs.	f1	57	Obs.	f1
0	160	0.7308	0.7308	111	0.6453	0.6453	81	0.5956	0.5956	42	0.4424	0.4420	27	0.4740	0.4740
1	45	0.2055	0.2055	49	0.2849	0.2841	39	0.2868	0.3150	31	0.3266	0.3780	15	0.2632	0.2778
2	14	0.0640	0.0640	7	0.0407	0.0415	6	0.0441	0.0630	16	0.1685	0.1300	5	0.0877	0.1250
3	..	.....	.....	5	0.0291	0.0291	7	0.0515	0.0054	3	0.0316	0.0230	6	0.1052	0.0230
4	..	.....	.....	..	.....	.....	3	0.0221	0.0220	1	0.0105	0.0019	2	0.0351	0.0019
5	..	.....	.....	..	.....	.....	..	.....	.....	2	0.0211	0.0211	2	0.0351	0.0001
6	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	0	0	0
b	..	.....	0.048	..	.....	0.027	..	.....	0.022	..	.....	0.021	..	.....	0
p	..	.....	0.124	..	.....	0.1280	..	.....	0.1166	..	.....	0.1475	..	.....	0.117
p'	..	.....	1	..	.....	1	..	.....	1	..	.....	1	..	.....	1

	2 Pregnancies			3 Pregnancies			4 Pregnancies			5 Pregnancies			6 Pregnancies		
Abortions	219	Obs.	f2	172	Obs.	f2	136	Obs.	f2	95	Obs.	f2	57	Obs.	f2
0	160	0.7308	0.7308	111	0.6453	0.6453	81	0.5956	0.5951	42	0.4424	0.4420	27	0.4740	0.4740
1	45	0.2052	0.2052	49	0.2849	0.2841	39	0.2868	0.3150	31	0.3266	0.3780	15	0.2632	0.2778
2	14	0.0640	0.0640	7	0.0407	0.0415	6	0.0441	0.0630	16	0.1685	0.1300	5	0.0871	0.1250
3	..	.....	.....	5	0.0291	0.0291	7	0.0515	0.0054	3	0.0316	0.0230	6	0.1052	0.0230
4	..	.....	.....	..	.....	.....	3	0.0221	0.0220	1	0.0105	0.0019	2	0.0351	0.0019
5	..	.....	.....	..	.....	.....	..	.....	.....	2	0.0211	0.0211	2	0.0351	0.0001
6	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	0	0	0
b	..	.....	0.048	..	.....	0.027	..	.....	0.022	..	.....	0.021	..	.....	0
p	..	.....	0.124	..	.....	0.1280	..	.....	0.1166	..	.....	0.1475	..	.....	0.117
p'	..	.....	1	..	.....	1	..	.....	1	..	.....	1	..	.....	1

	2 Pregnancies			3 Pregnancies			4 Pregnancies			5 Pregnancies			6 Pregnancies		
Abortions	219	Obs.	f2	172	Obs.	f2	136	Obs.	f2	95	Obs.	f2	57	Obs.	f2
0	160	0.7308	0.7308	111	0.6453	0.6453	81	0.5956	0.5951	42	0.4424	0.4432	27	0.4740	0.4740
1	45	0.2052	0.2052	49	0.2849	0.2841	39	0.2868	0.3150	31	0.3266	0.3780	15	0.2632	0.2778
2	14	0.0640	0.0640	7	0.0407	0.0415	6	0.0441	0.0630	16	0.1685	0.1300	5	0.0871	0.1250
3	..	.....	.....	5	0.0291	0.0291	7	0.0515	0.0054	3	0.0316	0.0230	6	0.1052	0.0230
4	..	.....	.....	..	.....	.....	3	0.0221	0.0220	1	0.0105	0.0019	2	0.0351	0.0019
5	..	.....	.....	..	.....	.....	..	.....	.....	2	0.0211	0.0211	2	0.0351	0.0001
6	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	0	0	0
b	..	.....	0.048	..	.....	0.027	..	.....	0.022	..	.....	0.021	..	.....	0
p	..	.....	0.124	..	.....	0.1280	..	.....	0.1166	..	.....	0.1475	..	.....	0.117
p'	..	.....	1	..	.....	1	..	.....	1	..	.....	1	..	.....	1

	2 Pregnancies			3 Pregnancies			4 Pregnancies			5 Pregnancies			6 Pregnancies		
Abortions	219	Obs.	f2	172	Obs.	f2	136	Obs.	f2	95	Obs.	f2	57	Obs.	f2
0	160	0.7308	0.7308	111	0.6453	0.6453	81	0.5956	0.5951	42	0.4424	0.4420

five and six abortions; the women having two, three, four, five and six pregnancies are considered separately. The observed frequency of abortion is shown in the columns headed "Obs." The theoretical frequency of abortion, calculated according to the assumption of Malpas that $p' = 1$, is given in columns f_1. The row marked b indicates the proportion of women subject to "habitual abortion." In the theory now

TABLE 4.—*Predicted Frequency of Consecutive Abortions*

		Number of Consecutive Abortions					
		1	2	3	4	5	6
I. Malpas's original calculation	F	0.19	0.0352	0.01361	0.01086	0.0108	0.01083
	R	0.055	0.254	0.605	0.959	0.945	0.995
	C	70.2	61.8	27.7	6.5	1.5	
II. Malpas's revised calculation	F	0.152	0.0450	0.01156	0.00564	0.00265	0.00260
	R	0.195	0.663	0.940	0.992	0.997	0.999
	C	70.4	29.6	6.4	0.7	0.2	
III. Present theory	F	0.1729	0.00758	0.00055	0.00008	0.00252	0.00780
	R	0.373	0.813	0.969	0.995	0.999	1.000
	C	70.9	30.5	10.3	10.2	15.9	

F, predicted frequency of consecutive abortions; R, proportion of habitual abortions among all abortions; C, per cent of "spontaneous cure" of women who have had indicated number of consecutive abortions. For Malpas's original calculations, $p = 0.17$, $p' = 1$, $b = 0.61$. The weighted averages of the constants in table 2 were used for the other calculations: For Malpas's revised calculations, $p = 0.126$, $p' = 1$, $b = 0.295$. For the present theory, $p = 0.1164$, $p' = 0.843$, $b = 0.0777$.

being considered, b indicates the proportion of women who would inevitably abort. The values of b and p were calculated by the methods of the theory of probability in such a way that theory and observation agreed for the frequencies of no abortion and of abortions for every pregnancy. It will be observed that the agreement is good in case of two and three pregnancies. This, however, is an inevitable consequence in case of two or three pregnancies and therefore does not prove the correctness of the theory. In case of four, five and six pregnancies the agreement between predicted and actual frequencies is poor. In particular, the actual frequency of more than three abortions often exceeds the theoretical frequency. This discrepancy can in part be

TABLE 5.—*Use of Wheat Germ Oil in Prevention of Repeated Abortion*

Author	Date	Cases	Successful Results	Daily Dose
Vogt-Möller	1931	2	2	5 cc.
Vogt-Möller	1934	20	17	"Fertilan" 3 Gm.
Vogt-Möller	1936	52	39	"Fertilan" 3 Gm.
Jukkar Schäffer	1935	2	2	?
Currie	1935	37	34	3 minims (0.2 cc.)
Watson and Tve	1936	47	34	1 to 6 cc.
Bishop	1937	2	1	"Fertilol" 3 capsules
Cromer	1938	4	2	?
Malpas	1938	9	2	?
Total		175	132	

"Fertilol" and "Fertilan" are commercial preparations of wheat germ oil. The quantity of "Fertilol" in three capsules was not stated.

obviated by adopting another theory: that the probability of abortion (p') is somewhat less than unity in a proportion of women (b). In order to calculate p, p' and b according to this theory, the assumptions were made that the theoretical and observed frequencies of no abortion and one abortion should agree and that the total expectancy of abortion in any group should be that calculated from theory. In this way the frequencies and constants in column f_3 were calculated. It is evident that the agreement between observed and calculated values of the frequencies is good.

The weighted means of the constants may be used to predict the probability of consecutive abortions in a sufficiently large group of women. These calculations are presented in table 4. This table shows the predictions both for the original theory of Malpas (I), his revised theory (II) and for the theory presented here (III). In all the theories the probabilities decrease rapidly at first. According to the theory of Malpas the frequency becomes nearly constant after three successive abortions but according to the other theory the frequency decreases indefinitely. According to either theory there is therefore a tendency for a certain calculable proportion of women to "recover" from repeated abortion.

Although the accuracy of the results is open to criticism because of the small number of cases on which the results are based, and although the general applicability of the particular frequencies may be questioned, a few important conclusions may be drawn: 1. The diagnosis of habitual abortion is not justified until a woman has had at least two consecutive abortions. This is indicated by the numbers in the rows marked R. These numbers are the ratios of the frequencies of "habitual abortion" to total abortions and show that after two or three consecutive abortions nearly all the women in the

TABLE 6.—*Relationship Between Number of Previous Abortions and Results of Treatment with Wheat Germ Oil*

Number of Previous Abortions	Number of Cases	Successful Results	Per Cent Successful Results
1	14	10	71
2	71	51	72
3	32	24	75
4	21	20	84
5	21	16	76
6	2	2	100
Not stated	3	3	100
Total	174	132	75

group are subject to "habitual abortion." Since artificial induction and organic disease account for more than 65 per cent of all abortions, these causes must be excluded in the definition of "habitual abortion." 2. Although the diagnosis of repeated abortion might have been made in from 4.5 to 6.8 per cent of the cases considered in this analysis, it seems likely that at least 2.9 per cent of the women were liable to repeated abortion and possible that 7.7 per cent may have been subject to a probability of abortion as great as 0.84. 3. There is a marked tendency to spontaneous cure of repeated abortion. For example, if a woman has had two consecutive abortions, the chances are about 1 to 3 that she will not have another.

The results claimed in the treatment of 175 cases of repeated abortion collected from the literature are presented in tables 5 and 6. The results would seem at first glance to be favorable, for relief of habitual abortion in 75 per cent of cases is indeed a result much better than one would expect without treatment. The greatest objection to accepting the reported results as actual cures lies in the uncertainty of diagnosis of habitual abortion. As I have already demonstrated, the occurrence of a single spontaneous abortion does not establish the diagnosis, and the expectancy in such a case that the next pregnancy will not result in an abortion is about 70 per cent. Even after two successive pregnancies have resulted in abortion there is an expectancy of no abortion in the next pregnancy of about

30 per cent. The reported success of treatment after three successive abortions have occurred is much more impressive. But here one has to consider the possibility that some or even all the abortions had been induced. The authors have been able to furnish satisfactory evidence in only about half of the cases in question that the abortions were spontaneous. There are two important reasons for the lack of this information. First, habitual abortion is infrequent. Consequently, those who are interested in its treatment have included in their reports not only their own cases but also the cases

TABLE 7.—*Increased Antitryptic Activity of Serum (Shute)*

	Normal Pregnancy	Miscarriage: Spontaneous	Miscarriage: Induced	Prematurity: Spontaneous	Prematurity: Induced	Abruptio Placentae
Number	128	26	3	30	5	62
Per cent with increase	6	77	33	42	60	78

of practitioners to whom they have furnished wheat germ oil. Second, the reported cases have not often been observed at the time of previous abortions. It seems quite possible that a number of the women may have had abortions induced and later, desiring an infant, may have sought medical advice.

Another difficulty in obtaining evidence of the effect of vitamin E in the prevention of habitual abortion lies in the lack of any exact knowledge of the outcome in the absence of treatment. We have attempted to predict what might be expected, but this prediction is based on a calculation from data admitted to be somewhat inaccurate. Before any claim for the specific effect of vitamin E in the prevention of repeated abortion can be accepted, more exact predictions of the expectancy of spontaneous cure are necessary.

A third difficulty in accepting the published results arises because of the extraordinarily varied amounts of wheat germ oil used by the various observers and because frequently no data are available to prove that the oil was potent.

DOSAGE

The daily dose of wheat germ oil used by five of the authors mentioned in table 5 [16] varied from 0.25 to 6 cc. In spite of this variation, the apparent success of treatment was the same. Shute believes that the requirements of pregnant women for vitamin E may be even larger than those already stated and has often given as much as 45 cc. of wheat germ oil a day for two weeks; in one case, 90 cc. was given. Shute bases this belief on his observation that the serum of women who have spontaneous abortion, premature labor and abruptio placentae frequently shows abnormally high antitryptic activity (table 7).[17] He ascribes this to an excess of estrogenic substance. According to him [18] the excessive antitryptic activity of the serum prevents normal penetration of the fetal villi into the maternal decidua, with resulting interference with fetal nutrition or even premature separation of the placenta with hemorrhage. He [6] states that sufficient doses of potent wheat germ oil will relieve the symptoms of abruptio placentae in most cases within twenty hours, provided the condition is due to deficiency of vitamin E as indicated by the test for antitryptic activity. He gives illustrations of this but no further data. Although the theory might explain the pathogenesis of vitamin E deficiency in women and would afford a laboratory test for the presence of deficiency, it must be pointed out that no other workers have reported data to confirm it. Cooper [19] believes that Shute's test furnishes a reliable index of the estrogenic content of the serum but gives no data. Cuthbertson and Drummond [20] question the reliability of Shute's method [21] for demonstrating antitryptic activity; they are unable to find an excess of antitryptic activity in the serum of rats with vitamin E deficiency; they used as controls rats receiving adequate diet and diet with excessive amounts of wheat germ oil. The studies were carried out both with Shute's original method and with a viscosimetric method. If much smaller doses of wheat germ oil are really effective in the prevention of threatened abortion (table 8) than those, according to Shute, necessary to reduce the antitryptic activity of the serum, the theory must be questioned.

STABILITY OF VITAMIN E

The potency of wheat germ oil in vitamin E not only is variable but diminishes rapidly at room temperature. For this reason Shute recommends that the pressed oil should be kept in the refrigerator and not be used if more than 8 weeks old.[22] Unfortunately no practical methods of assay exist. For these reasons it is difficult to ascribe some of the reported successful results in the treatment of habitual abortion and threatened abortion to vitamin E, especially when used in small doses. The production of synthetic vitamin E and of a more stable acetate [23] may provide investigators with substances that can be used in a critical study of the problems under discussion.

TABLE 8.—*Threatened Abortion*

Author	Year	Number	Successes	Daily Dose
Currie [16]	1937	15	14	25 cc.
Watson [16]	1936	19	13	12 cc. and over

UNFAVORABLE EFFECTS OF WHEAT GERM OIL

Those who advocate the use of small doses of wheat germ oil have reported no ill effects. Shute [22] states that the continuous administration of the oil up to the beginning of labor did not delay labor in sixty cases or prolong it in ten cases in which it was given during

16. Authors mentioned in table 5:
Vogt-Möller, P.: Treatment of Habitual Abortion with Wheat Germ Oil, Lancet **2**:182 (July 25) 1931.
Vogt-Möller.[3]
Vogt-Möller, P.: Die Behandlung des habituellen Aborts mit Weizenkeimöl (E Vitamin), Klin. Wchnschr. **15**:1883 (Dec. 19) 1936.
Jahiss-Schaffer.[4]
Currie, D. W.: Vitamins in Cases of Habitual Abortion, Lancet **2**: 1464 (Dec. 28) 1935.
Watson and Tew.[5]
Bishop.[15]
Cromer, J. K.: Wheat Germ Oil (Vitamin E) in the Treatment of Repeated Abortion, Spontaneous and Threatened, M. Ann. District of Columbia **7**:145 (May) 1938.
Malyas.[15]

17. Shute, Evan: The Relation of Deficiency of Vitamin E to the Antiproteolytic Factor Found in the Serum of Aborting Women, J. Obst. & Gynaec. Brit. Emp. **43**:74 (Feb.) 1936; Observation on the Etiology of Abruptio Placentae and Its Response to Vitamin E Therapy, ibid. **44**: 121 (Feb.) 1937.

18. Shute, Evan: Resistance to Proteolysis Found in the Blood Serum of Aborting Women, J. Obst. & Gynaec. Brit. Emp. **42**:1071 (Dec.) 1935; Is Estrin Cause of Resistance to Proteolysis Found in Blood Serum of Aborting Women, ibid. **42**:1085 (Dec.) 1935.

19. Cooper, William: Test for Blood Estrone, Brit. M. J. **1**:1056 (May 20) 1939.

20. Cuthbertson, W. F. J., and Drummond, J. C.: Criticism of Shute's Serum Test for Vitamin E Deficiency, Biochem. J. **33**:1621 (Oct.) 1939.

21. Shute, Evan: Antiproteolytic Properties of Human Blood Serum in Cases of Miscarriage and Premature Labor, J. Obst. & Gynaec. Brit. Emp. **44**:253 (April) 1937.

22. Shute, Evan: Wheat Germ Oil Therapy: II. Preservation of Potency, Influence on Labor, Seasonal Needs, Am. J. Obst. & Gynec. **35**:609 (April) 1938.

23. Isler, O.: Die Stabilisierung von d, l-alpha Tocopherol, Helvet chim. acta **21**:1756, 1939.

the first stage of labor. He has observed irritation of the gastrointestinal tract and rash in only six cases.[24] The danger of production of neoplasms [25] appears to be nonexistent (Day, Becker and McCollum; [26] Evans and Emerson; [27] Dingemanse and van Eck [28]).

CONCLUSIONS

Claims that vitamin E (wheat germ oil) is of value in the treatment of menstrual disorders, failure of lactation and the vaginal pruritus after the menopause cannot be accepted because of lack of sufficient clinical evidence.

The claim that vitamin E is of value in the prevention of habitual abortion cannot be accepted because of the lack of convincing clinical evidence. The diagnosis of habitual abortion in many of the published reports is open to question; the great variation in dosage of vitamin E and the lack of evidence that the preparations used were active make it difficult to attribute any effects claimed for it to the vitamin. Moreover, the expectancy of spontaneous cure in cases of so-called habitual abortion has not been accurately established.

Although the administration of wheat germ oil probably does not cause the development of neoplasms, unfavorable effects may follow its use in certain cases. These effects are usually not serious.

The published results of the treatment of habitual abortion with vitamin E are sufficiently encouraging to justify further clinical experiment. Such experiments are justified only if preparations of vitamin E of known activity are used and if adequate diagnosis and clinical control can be established.

Strong Memorial Hospital.

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

SNAKE VENOM SOLUTION (MOCCASIN) (Lederle Laboratories, Inc.) NOT ACCEPTABLE FOR N. N. R.

In 1935 the Council published a preliminary report on Snake Venom Solution (Moccasin) of the Lederle Laboratories, Inc., which had been submitted for consideration as useful in the treatment of hemorrhagic conditions.[1] The Council found the status of the preparation promising but felt that more adequate evidence was desirable for further consideration. In 1939 the Lederle Laboratories, Inc., called the attention of the Council to the fact that twelve papers on the subject had been published since the Council's report, ten containing evidence for its therapeutic use and two dealing with an intradermal test and the action of the venom on capillary walls.

The Council considered a report of the referee on the later literature. Allergic conditions and hemophilia were excluded as not meriting further consideration. The referee's report abstracted the later literature as follows:

Functional Uterine Bleeding.—Twenty-four cases were considered in the previous report. Goldberger and Peck [2] reported good results with the treatment of seventeen of a total of twenty patients. However, these seventeen included twelve whose cases were considered in the first report. Davin and his associates [3] administered venom to fifty-one patients and compared the results with those seen on fifty patients who served as controls. They stated that the results were encouraging but that much work remained to be done before the venom could be recommended in every obstetric case.

Idiopathic Epistaxis.—Five cases were considered in the first report; Dack [4] reported the two cases of himself and a colleague in the hospital; Goldman [5] reported forty-two cases (including the two reported by Dack) and stated that the venom was effective in arresting or diminishing the amount and frequency of bleeding in practically all cases. Dack was slightly more conservative.

Multiple Hereditary Telangiectasis (Osler's Disease).—Four cases were reported to the Council. Peck, Rosenthal and Erf [6] reported that the results of the venom test were negative but that two patients showed some improvement with continued treatment with venom.

Thrombocytopenic Purpura Haemorrhagica.[7]—Sixteen cases were considered in the first report. Greenwald in 1935 [8] reported the treatment of three patients with the venom, and in 1938 [9] he reported that these three had remained well and that active bleeding had been stopped in four others treated subsequently.

Tidy [10] applied the venom of Russell's viper locally—not by injection—in three cases, with reported satisfactory results.

Peck, Rosenthal and Erf in 1936 [11] used venom intradermally as a prognostic test in essential thrombocytopenic purpura; they injected the venom subcutaneously in thirty-four cases of chronic purpura haemorrhagica, with apparently good results in twenty-two. These investigators in 1937 [12] injected venom which had been titrated on the chicken embryo by the method of Witebsky, Peck and Neter [13] intradermally as a test for the fragility of capillaries and stated that the test is helpful in the management of thrombocytopenic purpura, in which it is a guide to local, general and toxic capillary changes. They [6] classified purpura with special reference to the selection of cases for treatment with venom and reiterated that its effectiveness had been proved during the previous five years.

Rosenthal,[14] who had previously published several papers with Peck and his associates on the use of venom, reviewed the history of 153 cases of thrombopenic purpura and classified them according to age, causation and course of the disease. He stated that spontaneous recovery occurred in 38 per cent of acute cases in all age groups. The referee's analysis of the table indicates that 80 per cent of those under 20 years (84 per cent if a case of drug idiosyncrasy is included) recovered "spontaneously." The meaning of the term "spontaneous" used in that paper is not clear, since the 153 cases under discussion included the fifty previously reported to the Council

24. Shute, Evan: Wheat Germ Oil Therapy: I. Dosage-Idiosyncrasy, Am. J. Obst. & Gynec. **33**: 249 (Feb.) 1938.
25. Rowntree, L. G.; Steinberg, Arthur; Dorrance, G. M., and Ciccone, E. F.: Sarcoma in Rats from the Ingestion of a Crude Wheat Germ Oil Made by Ether Extraction, Am. J. Cancer **31**: 359 (Nov.) 1937.
26. Day, H. G.; Becker, E. J., and McCollum, E. V.: Effect of Ether Peroxides in Wheat Germ Oil on Production of Tumors in Rats, Proc. Soc. Exper. Biol. & Med. **40**: 21 (Jan.) 1939.
27. Evans, H. M., and Emerson, G. A.: Failure to Produce Abdominal Neoplasms in Rats Receiving Wheat Germ Oil Extracted in Various Ways, Proc. Soc. Exper. Biol. & Med. **41**: 318 (June) 1939.
28. Dingemanse, E., and van Eck, W. F.: Wheat Germ Oil and Tumor Formation, Proc. Soc. Exper. Biol. & Med. **41**: 622 (June) 1939.
1. Snake Venom Solution Moccasin (Lederle), Preliminary Reports of the Council, J. A. M. A. **104**: 1073 (March 30) 1935.
2. Goldberger, M. A., and Peck, S. M.: Additional Data on the Treatment of Uterine Bleeding with Snake Venom, Am. J. Obst. & Gynec. **33**: 469 (March) 1937.
3. Davin, E. J.; Spielman, Frank, and Rosen, J. A.: Effect of Moccasin Snake Venom (Ancistrodon Piscivorus) on Parturient and Puerperal Bleeding, Am. J. Obst. & Gynec. **33**: 463 (March) 1937.
4. Dack, Simon: Treatment of Intractable Nasal Hemorrhage by Injections of Moccasin Snake Venom, J. A. M. A. **105**: 412 (Aug. 10) 1935.
5. Goldman, J. L.: Moccasin Snake (Ancistrodon Piscivorus) Venom Therapy for Recurrent Epistaxis, Arch. Otolaryng. **24**: 59 (July) 1936.
6. Peck, S. M.; Rosenthal, Nathan, and Erf, L. A.: Purpura: Classification and Treatment with Special Reference to Treatment with Snake Venom, Arch. Dermat. & Syph. **35**: 831 (May) 1937.
7. Different terminologies are employed by different investigators; the referee uses that which the investigator employed in a given case, even though it appears inconsistent at times.
8. Greenwald, H. M.: Dilute Snake Venom for the Control of Bleeding in Thrombocytopenic Purpura, Am. J. Dis. Child. **49**: 347 (Feb.) 1935.
9. Greenwald, H. M.: Thrombocytopenic Purpura: Nonsurgical Treatment, New York State J. Med. **38**: 1391 (Nov. 1) 1938.
10. Tidy, H. L.: Treatment of Hemorrhagic Diseases, Brit. M. J. **1**: 850 (April 25) 1936; 895 (May 2) 1936.
11. Peck, S. M.; Rosenthal, Nathan, and Erf, L. A.: The Value of the Prognostic Venom Reaction in Thrombocytopenic Purpura, J. A. M. A. **106**: 1783 (May 23) 1936.
12. Peck, S. M.; Rosenthal, Nathan, and Erf, L. A.: Intradermal Venom Reaction: A New Method of Determining Capillary Fragility, Proc. Soc. Exper. Biol. & Med. **35**: 614 (Jan.) 1937.
13. Witebsky, Ernst; Peck, S. M., and Neter, Erwin: Demonstration of Hemorrhagins in Snake Venom by Means of the Chicken Embryo, Proc. Soc. Exper. Biol. & Med. **33**: 722 (Feb.) 1935.
14. Rosenthal, Nathan: The Course and Treatment of Thrombopenic Purpura, J. A. M. A. **112**: 101 (Jan. 14) 1939.

with which venom was used. In "two typical" cases detailed there is no mention of the use of venom or other drug.

Rosenthal stated that no medical treatment can be regarded as specific; that venom and transfusion are the only acceptable palliatives in chronic thrombopenic purpura, and that venom, which is only palliative, was not responsible for all the improvement which followed its use. He recommends splenectomy in all chronic cases because of the danger of temporizing and because it is curative in the majority of such conditions. He holds that splenectomy is contraindicated in some acute cases and that venom is of diagnostic value. One feels that this paper is somewhat more conservative than some of the earlier ones.

Splenectomy.—It is necessary to consider this subject briefly because its relative value has a direct bearing on the usefulness of venom. Whipple[15] stated that of eight splenectomies performed in the acute stage of thrombocytopenic purpura haemorrhagica seven proved fatal but that there were only six deaths following splenectomy in seventy-three chronic cases. Of sixty-one splenectomies which could be followed the results were good in fifty-one, fair in four and poor in six. This does not take account of the six deaths in the seventy-three cases just mentioned.

It is usual to classify these cases of purpura as acute and chronic, but Rosenthal[14] stated that it is sometimes difficult to predict at the outset whether the disease is of the acute or chronic form. Brown and Elliott[16] stated that the efforts of surgeons to divide thrombocytopenic purpura into acute and chronic have resulted in much confusion. Brown and Elliott stated that the available evidence indicates that the operative mortality is from 13 to 14 per cent in the acute stage and from 5 to 6 per cent in the chronic. The low figures are to be expected only in carefully selected cases with adequate preparation for operation by experienced surgeons.

Andrus and Holman[17] reported the results in fifty splenectomies performed during five years at the New York Hospital. They reported no operative death in seventeen cases of congenital hemolytic jaundice, in twelve of thrombopenic purpura, in two of atypical purpura haemorrhagica, and in eight of Banti's syndrome. The results in the seventeen cases of chronic hemolytic purpura had been followed for periods of from three months to five years. Two patients died; the results were good in fourteen cases and fair in one. The results were good in eleven of the twelve cases of chronic thrombopenic purpura; one patient died after five months. The results were good in four of the eight cases of Banti's syndrome, fair in two and poor in one, and one patient died after two years. The authors stated that the attempt to extend splenectomy beyond the three favorable conditions—congenital hemolytic jaundice, thrombopenic purpura and Banti's syndrome—are attended with higher mortality and disappointing results.

The paper of Andrus and Holman was discussed by Whipple and by Paul Reznikoff. Whipple stated that he had reviewed the cases reported by the authors, the results of which were much like his own at the Presbyterian Hospital in New York; that it seems miraculous to see purpura disappear in from five to ten minutes after splenectomy, and that the term "Banti's syndrome" covers a certain amount of ignorance. Reznikoff stated that thrombopenic purpura gives hematologists a great deal of trouble; that it is often difficult to differentiate it from other diseases; that even necropsy does not always reveal the patient's trouble, and that physicians urge splenectomy after they have reached the end of their rope.

Vaughan and Wright[18] observed six patients for periods of from ten to fifteen years following splenectomy for purpura haemorrhagica; all continued to be free from bleeding phenomena; the best results followed splenectomy when the preoperative diagnosis of recurring idiopathic purpura haemorrhagica was unequivocal. It is significant that they could find records of only fifty-nine cases in which the results following splenectomy for this condition had been observed for more than five years, though the method had been in use for twenty-three years.

Schnierson, Lyttle and Peck[19] found that venom in the dosage used did not prevent the recurrence of moderate urinary changes in nephritis (subclinical) in twenty-two cases of scarlet fever and that it gave no evidence of causing damage to the renal capillaries. They concluded, therefore, that therapeutic doses do not damage the normal capillaries of the body.

Rosenthal[14] mentions three cases in which the intracutaneous injection of venom induced violent reactions. However, that method of administration is not generally used therapeutically. The previous report considered the frequent occurrence of hypersensitiveness to venom; this has been observed by all who have used it as Peck and his co-workers do. It is not usually a serious matter in the hands of one who is experienced in the use of venom, but a colleague in whose knowledge the referee has confidence holds that really serious reactions are not uncommon.

Brown and Elliott[16] state that it has been 200 years since Werlhof described a case of purpura haemorrhagica; during that time the greatest advance in its treatment was that by splenectomy, and it seems only fair to conclude that further advances will be made in the near future with the better appreciation of the necessity for preoperative diagnosis based on detailed studies of the blood, and other factors, and with more complete statistics showing greater precision in the selection of cases which should be treated palliatively and those in which operation should be performed promptly.

Few deny that venom has some diagnostic and palliative value, but it is impossible at present to determine the extent and limitations of its use, because it is not known when palliative treatment involves greater risk than operation in certain cases. A large part of the literature which the referee has seen comes from Peck and his associates, and only a smaller part, so far as venom is concerned, comes from hematologists not in any way associated with Peck; surgeons appear to give venom scant attention for the conditions under discussion here.

A consultant of extensive experience with venoms has furnished the following statement:

> It is difficult for me to give you a simple statement about moccasin venom. I have used it in about half a dozen cases. In at least four of the patients they have reacted with rather small doses to the venom so that at the site of injection their arms were swollen, red and painful. Desensitization of these patients I found to be impracticable because, after reaching a small dose such as 0.25 cc., they again developed local reactions.
>
> My best result was obtained in a patient who had purpura, a bleeding time of twelve minutes, and a decrease in platelets. I was able to give him as much as 1 cc. of the moccasin venom and his bleeding time decreased from twelve to four minutes, but from April 1935 through January 1937 he received moccasin venom in 1 cc. doses as often as three times a week and his bleeding time would fluctuate throughout this period from four to more than fifteen minutes, regardless of the dosage. His last platelet count, taken on March 9, 1939, was 30,000. In view of the fact that I could not consistently keep this man from spontaneous hemorrhage and increased bleeding time, I do not feel that the moccasin venom could be considered a specific palliative reagent.
>
> This subject is further complicated by spontaneous remissions, and in conclusion all I can say is that I do not feel that I am justified in using this venom with any assurance that it would be more effective than any other nonspecific treatment or transfusions. If I had to pass judgment on this for the Council, I would state that its acceptance should still be held up until better proof is obtained for its palliative efficacy.

As a result of the consideration of the referee's abstract and the consultant's statement, the Council reached the following conclusions: (*a*) that Snake Venom Solution (Moccasin) (Lederle) is not acceptable for New and Nonofficial Remedies because the scope of its usefulness and its limitations have not been established satisfactorily and because its use tends to delay the resort to splenectomy, which is known to be curative in a large percentage of cases of chronic involvement—a delay which may result in death; (*b*) that the general employment therapeutically of Snake Venom Solution (Moccasin) before its scope and limitations have been determined would do more harm than good and is not in the best interests of the public.

The Council informed the Lederle Laboratories, Inc., of its decision and of its willingness to reconsider when new evidence of the value of the product becomes available.

15. Whipple, A. O.: Spenectomy as a Therapeutic Measure in Thrombocytopenic Purpura Haemorrhagica, Surg., Gynec. & Obst. **42**: 329 (March) 1926.
16. Brown, D. N., and Elliott, R. H. E.: The Results of Splenectomy in Thrombocytopenic Purpura, J. A. M. A. **107**: 1781 (Nov. 28) 1936.
17. Andrus, W. deW., and Holman, C. W.: Splenectomy in Various Blood Disorders, Ann. Surg. **109**: 64 (Jan.) 1939.
18. Vaughan, S. L., and Wright, Thew: Purpura Haemorrhagica, with Special Reference to Permanence of Remission Following Splenectomy, J. A. M. A. **112**: 2120 (May 27) 1939.
19. Schnierson, S. S.; Lyttle, J. D., and Peck, S. M.: Effect of Moccasin Venom on Urinary Changes in Scarlet Fever, Am. J. Dis. Child. **52**: 796 (Oct.) 1936.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JUNE 1, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

FAT TRANSPORT IN THE ANIMAL BODY

The mechanisms provided for the transport of various food materials in the blood and across cellular barriers depend on the nature of the foodstuff. While amino acids and the simpler carbohydrates are generally soluble in water, fatty acids and most of their compounds are insoluble in an aqueous medium. For this reason the transportation of fat in the body presents a unique problem. In recent years research workers have resorted to novel methods, involving the use of fatty acids containing isotopes or radioactive elements in studies bearing on this problem; such methods have served to add considerably to our knowledge of the carriage of fat.

In a timely review Bloor [1] has summarized some of the more recent facts and ideas bearing on the problem of the transport of fat in the body. With regard to the transfer of fat across the intestinal mucous membrane, it may be recalled that normally fat is completely hydrolyzed during its stay in the intestine. The splitting of fats into their constituent parts, glycerin and fatty acids, might be considered as the first stage of fat transport. Although the absorption of unhydrolyzed fat from the intestine under particular conditions has been reported occasionally, in the light of present evidence as regards normal intestinal behavior it seems unlikely that the intact fat molecule is normally absorbed as such. In the presence of bile the fatty acids are soluble in water and are readily absorbed. Microscopic and chemical studies indicate the resynthesis of fat within the intestinal mucosa. The observation that the phospholipids of the mucosa change their fatty acids during fat absorption to correspond to those being absorbed but do not change in amount has led Sinclair [2] to assume that the absorbed fatty acids are transformed into phospholipid as an essential step in the resynthesis of neutral fat.

Unlike the water soluble metabolites, which are transported to the liver from the intestine, in the main, by way of the portal system, the water insoluble fats are largely absorbed via the lymph and reach the blood indirectly. Whether or not any appreciable amount of fat is absorbed directly into the blood is still a disputed point. It has been reported, however, that there is an increase in the total fatty acids of the blood during fat absorption in animals in which the lymph of the thoracic duct is diverted by fistula. In any case the small fat particles present in the blood, which are recognized as fat in the process of transport, come mainly from the intestine by way of the chyle. Most of the fat absorbed from the intestine reaches the tissues in this form. The increase of phospholipid in the blood during fat absorption has been repeatedly reported, and its occurrence as part of the mechanism of fat transport is also generally accepted. The results of animal experimentation indicate that during fat absorption there is not only an increase in the neutral fat but also a definite, although comparatively small, increase in the phospholipid content of the thoracic lymph.[3] Cholesterol is likewise involved in the carriage of fatty acids in the blood as well as in thoracic lymph. At least two thirds of the cholesterol of the plasma is combined with fatty acids as esters and about one fourth of the total fatty acids of the plasma is carried in the form of cholesterol esters. As Bloor, Blake and Bullen [4] have pointed out, of the three main fatty acid compounds of blood plasma—neutral fat, phospholipid and cholesterol esters—the degree of unsaturation is

1. Bloor, W. R.: Fat Transport in Animal Body, Physiol. Rev. **19**: 537 (Oct.) 1939.

2. Sinclair, R. G.: Role of Phospholipids of Intestinal Mucosa in Fat Absorption, with Additional Data on Phospholipids of Liver, and Smooth and Skeletal Muscles, J. Biol. Chem. **82**: 117 (April) 1929.

3. Brockett, S. H.; Spiers, M. A., and Himwich, H. E.: Lipid Components of Lymph of Thoracic Duct of Dog, Am. J. Physiol. **110**: 342 (Dec.) 1934.

4. Bloor, W. R.; Blake, A. G., and Bullen, S. S.: Lipids of Blood Plasma in Hay Fever and Asthma: Unsaturated Fatty Acids in Fat, Phospholipid, and Cholesterol Esters, J. Allergy **9**: 227 (March) 1938.

found to be greatest for the cholesterol ester fatty acid, next for the phospholipid and lowest for the neutral fat. This might indicate a special function of cholesterol in relation to the metabolism of the unsaturated fatty acids of blood plasma.

It is believed that the liver takes an active part in fat transport. Just as it permits the temporary storage of carbohydrate and protein, so also may the liver act as a temporary storage place for fat when this foodstuff is being absorbed. However, under normal conditions the fat content of the liver does not change a great deal, since the fat which comes to this organ is ordinarily worked over rather promptly and moved elsewhere. Under certain experimental conditions, nevertheless, comparatively large quantities of fat accumulate in the livers of experimental animals, and investigations of this phenomenon have yielded information bearing on the problem of fat transport. As pointed out by Bloor,[1] the fact that choline, but not colamine, is an effective substance in the prevention and cure of certain types of fatty livers would indicate that the phospholipid lecithin, rather than cephalin, is the more important metabolic intermediate in the metabolism of fat in the liver and perhaps in the whole organism. The role of the liver in the formation of ketone bodies is also of interest in connection with the transport of fats, since the production of ketone bodies by this organ is presumably an important factor in the transport of fatty acid fragments on the way to combustion.

Many questions relating to the problem of fat transport yet remain to be answered. It is heartening, however, to note that an ever increasing amount of light is being thrown on this subject as the result of investigative activity. New means of tagging fatty acids and fatty acid compounds have been developed, and the tracing of these compounds in the body has been facilitated.

YELLOW FEVER

The demonstration by the United States Army commission in Cuba under Major Walter Reed of the transmissibility of yellow fever by the mosquito Aedes aegypti is a brilliant chapter in the annals of American medicine. Another pioneer contribution of the commission was the disclosure that the blood of a person afflicted with this disease carries the filtrable causative agent during the first few days of illness, whereas the sputum, feces, urine and vomitus of the patient are not infected. The last epidemic of yellow fever in the United States occurred in New Orleans in 1905. At present this dread disease little concerns the general public in this country. Despite its virtual disappearance from the United States, however, the malady continues to be interesting to the medical profession. Recently Bauer,[1] of the International Health Division of the Rockefeller Foundation, has reviewed its status.

For more than twenty years the Rockefeller Foundation has been an important factor in the control of yellow fever in a number of South American republics. During this time many contributions relating to the yellow fever problem have been made by medical men associated with this organization. Unfortunately there is no specific treatment for yellow fever. The strategy of the campaign against the disease has been complicated by the fact that yellow fever, as has been known for a number of years, exists in tropical forests in the absence of Aedes aegypti mosquitoes. As pointed out by Bauer, this "jungle yellow fever" is ordinarily restricted to lower animals and is only accidentally transmitted to human beings. Nevertheless, persons who do become infected with the disease, which does not differ essentially from Aedes aegypti borne yellow fever, may serve as a source of infection for Aedes aegypti mosquitoes on entering a community where these insects occur. The disease may then be further spread by the mosquitoes and an epidemic may be initiated. The Rockefeller Foundation has in recent years shifted its emphasis from temporary anti-Aedes aegypti mosquito campaigns to a program which includes not only the prevention of Aedes aegypti transmitted yellow fever through rigid control in urban areas but also prevention of jungle yellow fever, as far as possible, through vaccination of exposed persons.[2] Of the weapons for combating yellow fever which have been developed in the laboratory, there is none more effective than individual vaccination against this disease. The availability of vaccine of satisfactory protective strength is limited by the fact that the substance is labile and tests to determine its activity require special laboratory facilities. Nevertheless, vaccination continues to play a leading part in the control of yellow fever; hundreds of thousands of persons living in places where there is danger of infection have been immunized with yellow fever vaccine.

The development of air travel between the United States and South America has made it more difficult to prevent the introduction of yellow fever into the United States from regions where it is endemic. When the voyage from South America to the United States is made by boat, any yellow fever infection that may be present on board is usually detected en route. When port is reached, appropriate quarantine measures prevent the spread of the disease. Travel by airplane is so much less time consuming than travel by ship, however, that it is now possible for a newly infected person to come to the United States from South America and travel around in this country for two or three days before becoming ill. During the first few days of his illness he may infect Aedes aegypti mosquitoes, if they are present in his neighborhood, and an epidemic outbreak of yellow fever may result. Bauer points out that our Southern cities are still infectible, as shown by

1. Bauer, J. H.: Pub. Health Rep. 55: 362 (March 1) 1940.

2. Fosdick, R. B.: The Rockefeller Foundation, A Review for 1939, New York, 1940.

recent epidemics of dengue fever, a disease which is transmitted from one person to another by Aedes aegypti, the same mosquito that transmits yellow fever.

Fortunately, officers of the U. S. Public Health Service are fully aware of the new problem presented by the air traffic with South America. Airplanes, like ships, are examined for mosquitoes, and persons who arrive by air or water and who are not in possession of vaccination certificates are kept under surveillance for the remainder of the incubation period. Moreover, the flying personnel of the air lines engaged in traffic with South America are vaccinated against yellow fever. Yellow fever has been banished from our shores for more than three decades. In view of the knowledge we now possess concerning its history, occurrence and control, and with the constant vigilance of officers of the U. S. Public Health Service at our ports of entry, we should be able to prevent a serious recurrence of the disease in the United States.

DIABETES IN PENNSYLVANIA

Strome and Blaine [1] have recently analyzed the trends in mortality from diabetes mellitus in Pennsylvania and in the United States Registration Area. The data for both the United States Registration Area and Pennsylvania were obtained from the Census Bureau reports. The study emphasizes the following facts: 1. Diabetes mortality rates are higher in the United States than in any other major civilized country. 2. Pennsylvania leads the United States with the highest mortality rates in the United States Registration Area. 3. Mortality rates from diabetes are increasing every year. 4. Numerically the recorded deaths from diabetes mellitus are increasing in the United States Registration Area and in Pennsylvania. From 1906 to 1937 the mortality rate from diabetes in the United States Registration Area increased from 12.7 to 23.7 per hundred thousand, an increase of 186 per cent. In Pennsylvania from 1906 to 1937 the mortality rate from diabetes increased from 10.5 to 31.2 per hundred thousand, an increase of 297 per cent. Great as is the increase in diabetes mortality rates in the United States Registration Area, that of Pennsylvania exceeds it by 110 per cent. At the same time the death rates from all causes in the United States Registration Area steadily declined from 1900 to 1938 and in the state of Pennsylvania from 1906 to 1938.

Paradoxical as it may seem, the introduction of insulin therapy has added to the incidence of mortality from diabetes. What has really happened is that the mortality has been shifted from the younger age to the older, for the increase is limited to ages 45 and over. Under the age of 45 there has been a marked lowering of the death rate, undoubtedly due to the introduction of insulin therapy. In addition to saving the lives of young persons with diabetes, insulin has the effect of prolonging the lives of adult and middle-aged diabetic patients. Since, however, as Dublin once remarked, insulin does not confer immortality, these patients sooner or later succumb to the degenerative diseases of their age, such as pneumonia, cancer, arteriosclerosis and nephritis.

Another item of interest is that women after 35 show a greater increase in the death rate than men of the same age. At the ages of 35 to 44 the excess of the female death rate over that of the male is 26 per cent and it increases rapidly to 85 per cent at ages 45 to 54. The maximum disparity in mortality for the two groups, 115 per cent, occurs in ages past 55.

The chief lesson to be learned from this report is that diabetes today presents a serious and growing public health problem. It is tenth in the list of causes of death. According to Dublin [2] more women over 55 years of age die of diabetes than of tuberculosis. From 2 to 3 per cent of our present population will ultimately die of diabetes. The situation perhaps is not as alarming as might appear on first consideration. Both Joslin [3] and Dublin believe that this increase is partly real and partly apparent. The apparent increase is due to the great extension of medical facilities and an earlier diagnosis. The discovery of insulin created a widespread interest in the disease. More physicians now look for the disease than ever before. Thus more cases are registered as deaths from diabetes rather than from some other cause as actually happened in the past. The real increase in the incidence of diabetes is, however, generally admitted. A definite answer as to the relative importance of the apparent increase and the real increase cannot be given at present. Joslin stresses overweight as the one most important factor in the real increase in the incidence of the disease. This factor has been brought about, according to Joslin, by social forces which are making for the improvement of the standards of life of the population. The introduction of machinery relieved men of much physical work, while the increase in the standards of living brought about a greater consumption of food. Thus two forces operate to disturb the metabolic equilibrium of large numbers of persons.

A satisfactory explanation has not been offered for the much greater death rate for diabetes in women. If Joslin's contention that overweight is the most important etiologic factor be admitted, then the almost universal practice of rigid dieting among American women for the past decade should have had the effect of reducing the mortality among them, which it did not.

Strome and Blaine recommend that: 1. Every man and woman should have periodic health examinations with urinary and blood sugar determination if indicated, most emphatically so after the twenty-fifth year. 2. Death certificates should clearly specify whether a death is from diabetes or with diabetes. 3. A statewide educational program for the physician and carefully

1. Strome, F. P. and Blaine, B. C.: Diabetes Mortality in Pennsylvania, Pennsylvania M. J. **43**: 481 (Jan.) 1940.

2. Dublin, L. I.: Recent Trends in Diabetes Mortality, Bull. New York Acad. Med. **9**: 540 (Sept.) 1933.

3. Joslin, E. P.; Dublin, L. I., and Marks, H. H.: Studies in Diabetes Mellitus: III. Interpretation of the Variations in Diabetes Incidence, Am. J. M. Sc. **189**: 163 (Feb.) 1935.

written information for the layman for the perception, diagnosis and treatment of diabetes should be instituted. To this might be added a suggestion by Stafne [4] that what is more necessary is a wide dissemination of knowledge. He found in a somewhat similar study as a member of the Commission on Diabetes of the Minnesota State Medical Association that 28 per cent of the deaths from diabetes in Minnesota are attributable to uncomplicated diabetic coma. Such preventable deaths indicate failure to make use of established methods.

The epidemiologic or mass approach to the problems of the more important diseases such as tuberculosis, syphilis, heart disease, cancer and diabetes is a step in the right direction. This interesting study has come from the Commission on Diabetes and the Medical Society of Pennsylvania. Its authors, F. P. Strome, director of the Bureau of Vital Statistics, Pennsylvania Department of Health, and B. C. Blaine, chairman of the Commission on Diabetes of the Medical Society of the State of Pennsylvania, are to be congratulated on initiating what promises to be a state by state study of an important health problem.

Current Comment

MANAGEMENT OF ACNE VULGARIS

Six well known dermatologists, questioned recently by the *Journal of Investigative Dermatology* [1] on the management of acne vulgaris, express considerable unanimity and only occasionally a difference of opinion. Thus, all are agreed that endocrine therapy is without value. The vitamins are likewise regarded as valueless except for the general indication of improving the health of the patient. Five of the contributors found that vaccines and toxoids are without value. One contributor states that a staphylococcus toxoid is of value especially in the pustular type. The relation of anemia to acne was considered as casual and not causal. All were agreed that the administration of hematinics has little if any effect on the course of the disease. Roentgen therapy is regarded as a valuable though not a dominant feature in the management. One contributor resorted to it in about 25 per cent of his cases, while another dispensed with it in the majority of his cases. One of the contributors would not employ it under the age of 17 years. Another restricted it to patients above 16 and still another to patients above 15, while two employed it at any age and one employed it occasionally for patients of 12 and even 10 years of age. All are more or less opposed to repetition of a single course. One never gives more than a single course. Another contributor would wait at least one year before repeating and still another prefers to wait two or three years. Results from roentgen therapy varied from excellent to fair and no response. Four contributors did not think that roentgen therapy increased the tendency to pitting and scarring. One even felt that it had the effect of diminishing the tendency and only one had seen evidence of damage "even under proper dosage." Roentgen therapy was most effective when combined with other measures and was not practiced alone. Four of the contributors stressed the importance of so-called acne surgery. This consisted in opening the pustules and extracting comedones. One did not practice it and one felt that it might aggravate the condition. He believed that sulfur paste was capable of accomplishing the same purpose. The importance of local medicinal treatment is concurred in by all. The topical applications most commonly used are combinations of sulfur, resorcinol or salicylic acid. One of the contributors regularly prescribes 10 per cent kaolin and 10 per cent precipitated sulfur in zinc oxide ointment. One of the contributors obtained 60 per cent of cures in from three to eight months with topical drugs "that keep the skin in constant state of desquamation." Dietary treatment was considered without special value by all except one. This contributor insisted that diet was essential to success in the treatment of acne. He prescribed a low fat diet. Milk was considered the most common offensive substance. Iodine in cooking salt was recommended. Another contributor would cut down the carbohydrates and interdict the use of iodine salt. A middle position is taken by the dermatologist, who would correct the irregularities in the diet and interdict the eating of chocolate and the use of butter. He admits, however, that indiscretions in diet are not the cause or the precipitating factor in acne.

PEMPHIGUS

The highly fatal nature of pemphigus together with its uncertain and unexplained etiology and pathogenesis make it a disease of unusual interest. Talbott and Coombs,[1] in a recent study of thirty-four patients with pemphigus, classify the disease simply as either acute or chronic. Study of the blood of the patients with acute pemphigus showed changes in concentration of constituents consistent with adrenal insufficiency. Patients with either type of pemphigus showed an increase in volume of plasma, blood and interstitial fluid. Ten patients with acute pemphigus were observed with special care and to five of them only supportive treatment was given. Death of all the latter followed in from eleven days to eight weeks after onset of acute symptoms. In two of the three in whom necropsies were performed anatomic changes were demonstrable in the adrenal glands. The other five patients with acute pemphigus were given large amounts of adrenal cortex extract and sodium chloride solution. This procedure was followed in each instance by a remission, which persisted three and one-half and three years respectively in two patients without further specific treatment. In the remaining three the remission lasted only as long as active material was given and eventually this became ineffective. Although these observations do not appear to elucidate the causative factors materially, they do constitute an arresting contribution to the knowledge of pathogenesis.

4. Stafne, W. A.: Diabetes in Minnesota, Minnesota Med. **17**: 503 (Sept.) 1934.

1. Symposium on the Practical Management of Acne Vulgaris, J. Invest. Dermat. **3**: 143 (April) 1940.

1. Talbott, J. H., and Coombs, F. S.: Pemphigus, Arch. Dermat. & Syph. **41**: 359 (Feb.) 1940.

ORGANIZATION SECTION

MEDICAL LEGISLATION

STATE MEDICAL LEGISLATION

Louisiana

Bill Introduced.—H. 21 proposes to require a physician attending a pregnant woman to take or cause to be taken a sample of her blood within fifteen days of the time of the first examination and to submit the sample to an approved laboratory for a standard serologic test for syphilis. All other persons permitted by law to attend pregnant women but not permitted to take blood samples must cause a sample of blood to be taken by a licensed physician.

MEDICAL BILLS IN CONGRESS

Bills Introduced.—S. 3997, introduced by Senator Reynolds, North Carolina, proposes to authorize the Administrator of Veterans' Affairs to furnish domiciliary care and medical and hospital treatment to any former member of the Army, Navy, Marine Corps or Coast Guard who was not dishonorably discharged therefrom and who received such care or treatment at any Veterans' Administration facility at any time prior to March 20, 1933. S. 4017, introduced by Senator Nye, North Dakota, proposes that any veteran of any war, who was not dishonorably discharged, suffering from any disability, disease or defect, irrespective of whether such disability, disease or defect was service connected, shall be entitled to receive outpatient treatment at such facilities of the Veterans' Administration within the limitations of such facilities, under such regulations as the Administrator of Veterans' Affairs shall prescribe.

DISTRICT OF COLUMBIA

Change in Status.—S. 2013 has been reported to the Senate, with amendments, proposing to amend the Code of the District of Columbia to provide for the organization and regulation of cooperative associations. The Senate Committee on the District of Columbia, in reporting the bill, recommended that there be stricken from it the following sentence: "In the case of an association formed hereunder which arranges the rendering to its members, of licensed professional services on a non-profit basis, said association shall not be subject to the insurance laws, shall not be construed as being in violation of any rule against corporate practice of professions, or in violation of statutes regulating licensure of professions."

OFFICIAL NOTES

THE NEW YORK SESSION

Special Radio Programs

The following radio programs have been arranged in connection with the annual session of the American Medical Association in New York.

Dr. Rock Sleyster, President of the Association, will broadcast over the Columbia Broadcasting System, Wednesday, June 12, from 10:15 to 10:30 p. m., eastern daylight saving time. His subject will be "The American Medical Association and Health Education." Dr. Nathan B. Van Etten, President-Elect, will broadcast over the Blue Network of the National Broadcasting Company, Tuesday, June 11, from 5:15 to 5:30 p. m. His subject will be "American Doctors and American People." Dr. Van Etten will also participate in the "Adventures in Science" program over the Columbia Broadcasting System on Thursday, June 13, from 4 to 4:15 p. m. Dr. Sleyster's talk will be translated and rebroadcast in Yiddish and in Italian.

The programs to be broadcast from New York, with stations, speakers, dates and topics, all on eastern daylight saving time, are as follows:

SATURDAY, JUNE 8:

Station WABC (CBS), 1:15-1:30 p. m. Dr. Philip Lewin, Chicago, "One Pair of Legs Must Last a Lifetime."

MONDAY, JUNE 10:

Station WQXR, 10:30-10:45 a. m. Dr. Harold C. Voris, Chicago, "Head Injuries."

Station WOV, 1:15-1:30 p. m. Dr. Vincenzo Fanoni, New York, will broadcast an Italian translation of Dr. Sleyster's talk "The American Medical Association and Health Education."

Station WOR, 2:45-3 p. m. Dr. Chevalier Jackson, Philadelphia, "Removing Foreign Bodies From the Lungs." Dr. Morris Fishbein or Dr. W. W. Bauer, Chicago, "News of the Meeting."

TUESDAY, JUNE 11:

Station WEVD, 10-10:15 p. m. Dr. L. B. LaPlace, Philadelphia, "Heart Disease."

Station WMCA, 11:15-11:30 a. m. Dr. Wallace E. Herrell, Rochester, Minn., "Sulfanilamide."

Station WOR, 3-3:15 p. m. Dr. A. H. Bulbulian, Rochester, Minn., "Restoring Facial Defects." Dr. Morris Fishbein or Dr. W. W. Bauer, Chicago, "News of the Meeting."

Blue Network, National Broadcasting Company, 5:15-5:30 p. m. Dr. Nathan B. Van Etten, "American Doctors and American People."

WEDNESDAY, JUNE 12:

Station WABC, Columbia Broadcasting System, 10:15-10:30 p. m. Dr. Rock Sleyster, Wauwatosa, Wis., "The American Medical Association and Health Education."

Station WQXR, 4:15-4:30 p. m. Dr. Elliott Joslin, Boston, "Diabetes."

THURSDAY, JUNE 13:

Station WNYC, 11:45 a. m.-12 noon. Dr. Carl Badgley, Ann Arbor, Mich., "Pain in the Back."

Station WNYC, 1:30-1:45 p. m. Dr. John A. Toomey, Cleveland, "Prevention of Communicable Disease."

Station WABC, Columbia Broadcasting System, 4-4:15 p. m. Dr. Nathan B. Van Etten, "Adventures in Science."

Blue network, National Broadcasting Company, 5:15-5:30 p. m. Dr. Morris Fishbein or Dr. W. W. Bauer, Chicago, "News of the Meeting."

FRIDAY, JUNE 14:

Station WOR (MBS), 10:30-10:45 a. m. Dr. Albert E. Sloane, Boston, "School Children's Eyes."

Station WQXR, 11-11:15 a. m. Dr. L. S. Selling, Detroit, "Who Has Traffic Accidents, and Why."

Station WNYC, 11:45 a. m.-12 noon. Dr. Kellogg Speed, Chicago, "What a Broken Bone Really Means."

SATURDAY, JUNE 15:

Station WEVD, 2:45-3 p. m. Dr. H. L. Gordon, New York, will broadcast a Yiddish translation of Dr. Sleyster's talk "The American Medical Association and Health Education."

A radio talk on "Pneumonia" by Dr. H. F. Flippin of Philadelphia will be broadcast at a time to be announced later.

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ADDRESSES BY OFFICIAL STAFF

DR. W. W. BAUER:

June 11—Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, Symposium, New York City.
June 18—Borrowed Time Club, Evanston, Ill.
June 26—Milwaukee Hospital School of Nursing, Milwaukee.

DR. MORRIS FISHBEIN:

June 2—Council of Negro Organizations, Chicago.
June 6—Rush Medical Alumni, Chicago.
June 7—Bergen County Medical Society, New Jersey.
June 11—Woman's Auxiliary, New York City.
June 23-24-25—Maine Medical Association, Rangeley, Maine.
June 26—New Jersey Pharmaceutical Association, Asbury Park.

WOMAN'S AUXILIARY

Colorado

The directors of the auxiliary to the Colorado State Medical Society met in Denver, February 8, with thirty-six members present. The most important project of the auxiliary is its benevolent fund for doctors' families in need. The auxiliary has raised $3,052 for the fund, which was established about six years ago. Also, a special activity of the auxiliaries in Colorado has been the placing of *Hygeia* in schools and public libraries.

Oregon

Members of the auxiliary to the Josephine County Medical Society meet regularly to sew for the Josephine County General Hospital in Grant Pass.

The auxiliary to the Lane County Medical Society has placed *Hygeia* in the libraries of twenty-seven schools in the county.

The auxiliary to the Multnomah County Medical Society maintains a student loan fund, which is used by a student at the University of Oregon Medical School. The study group of the auxiliary in October discussed a paper on "Occupational Therapy."

Pennsylvania

The auxiliary to the Allegheny County Medical Society met in Pittsburgh January 23. Miss Frances Shirley, who is in charge of the Industrial Home for Crippled Children, spoke on "The Care of Crippled Children." Dr. Walter F. Donaldson, secretary, Medical Society of the State of Pennsylvania, discussed socialized medicine.

The auxiliary to the Beaver County Medical Society has placed *Hygeia* in the high schools of the county and has made gifts totaling $110 to the county institutions.

At the fourth annual health conference of the auxiliary to the Berks County Medical Society in Reading, January 8, Dr. O. Paul Holmer, director of the Child Guidance Institute of Berks County, discussed "Normal Activities of the Adolescent Boy and Girl"; Dr. Fred B. Nugent, chief of the gynecology department of Reading Hospital, "Preparing for a Normal Menopause"; Dr. Edward L. Bortz, chairman, Commission for the Study of Pneumonia Control, Medical Society of the State of Pennsylvania, "The Doctor Looks at Pneumonia"; Dr. George R. Clammer, pediatrics department of St. Joseph Hospital, Reading, "Preparing the Preschool Child to Face the World," and Dr. Robert J. Phifer, clinical director Wernersville State Hospital, "Psychiatry." A health film was shown and awards were presented to winners of the essay contest on the subject "Why General Good Health is an Asset" by Dr. Charles E. Lerch, president of the Berks County Medical Society.

Texas

The auxiliary to the El Paso County Medical Society met in El Paso January 8. Mr. R. E. Sherman spoke on housing and slum clearance. At a meeting, February 12, there was a discussion on socialized medicine. The auxiliary made the following donations: to the Baby Sanatorium at Cloudcroft, New Mexico, $75; to the student loan fund of the state auxiliary $25, and to the memorial fund of the state auxiliary $25.

The auxiliary to the Bexar County Medical Society observed its annual public relations day with a luncheon on the roof of the Plaza Hotel, San Antonio. Speakers were Dr. Herbert Hill, president of the Bexar County Medical Society, and Dr. Francisco Del Rio y Canedo, who spoke on "Medicine in Mexico," illustrated by a motion picture. The auxiliary entertained ladies accompanying their husbands to the International Post Graduate Medical Assembly with a Mexican supper on January 23, with 125 guests in attendance. More than 200 ladies attended the tea for new members of the auxiliary at the Medical Library February 2. At the annual "Bring Your Husband" luncheon, February 9, speakers were Mrs. S. H. Watson, president of the auxiliary to the State Medical Association of Texas, and Dr. Sam E. Thompson. Dr. Thompson's subject was "Ethics for a Doctor's Wife."

The auxiliary to the Henderson County Medical Society met in Chandler, January 9, at the home of Mrs. J. F. Baugh. Dr. Gideon Francis Moon spoke on "Medicine, Yesterday and Today."

The auxiliary to the Hunt-Rockwall-Rains Counties Medical Society met in Greenville January 2. "Safety First," by Alvin Knight, was reviewed.

At a meeting of the auxiliary to the Johnson County Medical Society in Cleburne recently Mrs. R. W. Kimbro read a paper entitled "A Visit to Some European Clinics."

The auxiliary to the Kerr-Kendall-Gillespie-Bandera Medical Society has given complimentary renewal subscriptions to *Hygeia* to the public schools in these counties.

The auxiliary to the Tarrant County Medical Society met in Fort Worth January 12. Mrs. E. M. Wier spoke on "Marihuana: Evil Effects of Its Use on Youth." The auxiliary observed Doctor's Day, with a dinner, dancing and a hobby show at the Woman's Club, Fort Worth, February 9.

Washington

Mrs. L. S. Roach, president of the auxiliary to the Washington State Medical Association, spoke on the aims of the auxiliary at a meeting of the auxiliary to the Grays Harbor County Medical Society in Aberdeen January 17.

Miss Mary Huston, head of Whitman College Infirmary, talked on the status of nursing and medicine in Puerto Rico at a meeting of the auxiliary to the Walla Walla County Medical Society in Walla Walla January 15.

Articles from *Hygeia* were reviewed and medical current events given at a meeting of the auxiliary to the Clark County Medical Society at the home of Mrs. Charles Otto, near Vancouver, January 9.

Wisconsin

The auxiliary to the Dane County Medical Society held its January meeting in Madison. Mr. G. B. Larson spoke on hospital insurance. The booklet "The Doctor's Wife," by Dr. Rock Sleyster, President of the American Medical Association, was read.

At a recent meeting of the auxiliary to the Fond du Lac County Medical Society in Fond du Lac, members voted to give twenty complimentary subscriptions to *Hygeia* to be placed in schools and libraries of the county.

At the February meeting of the auxiliary to the Kenosha County Medical Society in Kenosha, Mr. Nicholas Magaro gave a talk, illustrated by moving pictures, of his trip to Italy.

Dr. W. M. Jermain, president of the Milwaukee County Medical Society, discussed the functions of the auxiliary, and Mr. James O. Kelley, executive secretary of the society, spoke on "What Every Doctor's Wife Should Know" at a meeting of the auxiliary to the society in Milwaukee February 9.

The January meeting of the auxiliary to the Washington-Ozaukee County Medical Society was held in Richfield. The auxiliary has given twenty-six complimentary subscriptions to *Hygeia* to schools and hospitals in the two counties.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education and public health.)

ARKANSAS

Tuberculosis Society Elects Officers.—The Arkansas Tuberculosis Association recently elected the following officers, among others: Drs. Augustus C. Shipp, Little Rock, president, and Solomon F. Hoge, Little Rock, secretary-treasurer.

State Medical Meeting and Election.—Dr. Herbert Fay H. Jones, Little Rock, was chosen president-elect of the Arkansas Medical Society at its sixty-fifth annual session in Fort Smith, and Dr. Henry T. Smith, McGehee, was installed as president. Other officers include Drs. Ira Fulton Jones, Fort Smith; Henry V. Kirby, Harrison, and Charles W. Dixon, Gould, vice presidents; Royal J. Calcote, Little Rock, treasurer, and William R. Brooksher, Fort Smith, secretary. The 1941 session will be in Little Rock, April 14-16. Included among the out of state speakers at the meeting were:

Dr. Edward H. Skinner, Kansas City, Mo., who addressed a public meeting, The Priceless American Heritage of Health and Happiness.
Dr. Ira H. Lockwood, Kansas City, Mo., The X-Ray Examination in Ileus and Intestinal Obstruction.
Dr. Meyer Wiener, St. Louis, What Do the Ophthalmologist and General Practitioner Expect of Each Other?
Dr. William P. Sadler, Minneapolis, The Climacteric: Some Phases in Its Management.
Dr. John J. Shea, Memphis, Tenn., The Management of Mastoid Complications.
Dr. James B. Stanford, Memphis, Tenn., Fundus Examination as an Aid in Diagnosis and Prognosis of General Disease.
Dr. John H. Connell, New Orleans, The Advantages of Serum Transfusions Over Other Intravenous Vehicles.

COLORADO

Society News.—Dr. Dwight B. Shaw presented a "Diagnostic Résumé of Appendicitis" before the Pueblo County Medical Society, April 16, in Pueblo. Dr. William F. Singer discussed "Medical, Economic and Social Progress in a Changing World" before the society, April 2.——The San Luis Valley Medical Society was addressed, April 16, by Dr. Delmer E. Johnson, San Luis, on psychotherapy.——Dr. James Murray Scott, Kalamazoo, Mich., addressed the Medical Society of the City and County of Denver, May 7, on "Ovulation and the Effects of the Gonadotropic Hormone of Pregnant Mare's Serum." Dr. Joseph S. Barr, Boston, addressed a special meeting of the society, May 10, on "Relationship of Ruptured Intervertebral Disks to Low Back and Sciatic Pain."

DELAWARE

Banquet Marks Tenth Anniversary of Academy.—A banquet was held, May 9, to observe the tenth anniversary of the founding of the Delaware Academy of Medicine, Wilmington. The guest speaker was Dr. Oliver Hazard Perry Pepper, Philadelphia, and Dr. Lewis B. Flinn, president of the academy, was the toastmaster. Other speakers included Dr. William H. Kraemer, who gave a short summary of the academy's history, and Charles M. A. Stine, Ph.D. Governor Richard C. McMullen was expected to attend.

DISTRICT OF COLUMBIA

Quality Factors in Pediatric Service.—A regional meeting of the American Academy of Pediatrics, April 4, in Washington, was devoted to a panel discussion of "Factors Influencing the Quality of Medical Care in the Various Types of Pediatric Service." The speakers included Drs. Alexander T. Martin, New York; Frederick F. Tisdall, Toronto; Adolph G. G. DeSanctis, New York; Harold H. Mitchell, Long Island City, N. Y., and Jessie M. Bierman and Martha M. Eliot, Washington.

Society News.—Dr. Paul D. White, Boston, addressed the Academy of Medicine of Washington, May 16, on "The Heart in Middle Life." Dr. Warren F. Draper, assistant surgeon general, U. S. Public Health Service, Washington, has been elected president of the academy.——Dr. Isaac A. Bigger, Richmond, Va., discussed "Traumatic Surgery of the Thorax" before a meeting of the medical and dental officers of the navy on duty in the District of Columbia and vicinity, April 1.——The Washington Ophthalmological Society was addressed, recently, by Drs. Avery D. Prangen, Rochester, Minn., on "Some Salient Features in the Surgical Treatment of Extraocular Muscles"; Georgiana M. D. Theobald, Oak Park, Ill., "Origin of Choroidal Tumors," and Cecil S. O'Brien, Iowa City, "Carcinoma of the Eyelids."——Included among the speakers before the Washington Society of Pathologists recently were Drs. Thomas F. Crahan, "Curettings from Skin Sinus"; Lester Neuman, "Tumor of Testicle," and William W. Hurteau, "Brain Tumor."

ILLINOIS

Personal.—Friends, relatives and medical colleagues gave a dinner and reception recently to celebrate the fiftieth anniversary in the practice of medicine of Dr. Thomas H. Culhane, Rockford.——Several affairs were held recently to observe the completion of fifty years in the practice of medicine of Dr. Henry O. Munson, Rushville, including a testimonial dinner in Rushville, April 12, at which the fifty year medals of the Illinois State Medical Society were presented to him and to Dr. Albert R. Lyles, Virginia, who also has completed fifty years as a physician. Dr. James H. Hutton, Chicago, president of the state society, was the guest speaker and the guests included Dr. Harold M. Camp, Monmouth, secretary of the society, and other members.

New Society of Pathologists.—The Illinois Society of Pathologists was organized at a meeting in Chicago, April 6, with Dr. Josiah J. Moore, Chicago, as president; Dr. Oscar T. Schultz, Evanston, vice president, and Dr. Israel Davidsohn, Chicago, secretary-treasurer. Its object will be to promote the advancement of anatomic and clinical pathology, to facilitate friendly and ethical relations between pathologists, to promote a clearer understanding of the position of the pathologist and his technical assistants in the hospital, to study economic conditions in relation to the practice of pathology, to stimulate scientific investigation and to promote the practice of scientific medicine by a wider application of clinical and laboratory methods to the diagnosis and prevention of disease. It is planned to hold two meetings a year, one during the annual meeting of the Illinois State Medical Society and one in the fall in Chicago. The first scientific program was presented at the state meeting in Peoria, Tuesday, May 21, with the following speakers: Dr. Victor Levine, Chicago, on "Value of Routine Serologic Tests"; Dr. Frank B. Queen, Chicago, "Value of Biopsy," and Dr. Hubbard Prather Saunders, Chicago, "Organization and Function of Tumor Clinic in Voluntary Hospitals." Dr. Edwin F. Hirsch, Chicago, conducted a clinicopathologic conference.

Chicago

Alumni Day at Illinois.—Alumni Day will be observed at the University of Illinois College of Medicine, June 6. In the morning the medical alumni association and the faculty will present a clinical program at the Illinois Research and Educational Hospital. Open house will be held in the afternoon and in the evening the annual banquet will be held at the Chicago Towers Club. Dr. Michael H. Streicher is secretary of the alumni association.

Two Million Dollars for New Hospital.—Under the will of the late Margaret Gray Morton, Northwestern University will receive more than $2,000,000 to erect and endow the Morton Memorial Hospital on the Chicago campus, newspapers recently reported. The will provided also that the bequest be used for medical research. According to the report the new hospital, the fourth medical unit on the Chicago campus, will be built on property owned by the university to the east of Passavant Hospital on East Superior Street, but no date was given when construction was expected to begin. Mrs. Morton was the widow of Joy Morton, financier and founder of the Morton Salt Company.

Society News.—The Chicago Urological Society was addressed, May 23, by Drs. Donald B. Douglas, Waukegan, on "Neurogenic Bladder with Special Reference to the Atonic Type"; Frederick Lieberthal, "Mechanism of Ureteral Obstruction in Prolapse of the Uterus," and Donald K. Hibbs and George Shropshear, "Genito-Infectious Lesions Complicating Gonorrhea."——The Chicago Orthopaedic Society was addressed at its annual meeting, April 12, by Drs. George E. Wakerlin on "Recent Advances in Calcium Metabolism"; Lyman W. Smith, "Effect of Time on the Holding Power of Screws in Bone," and Carlo S. Scuderi, "Fat Embolism—An Experimental and Clinical Study."——Among others, Dr. Franklin F. Snyder addressed the Chicago Gynecological Society, May 17, on "The Rate of Entrance of Amniotic Fluid into the Pulmonary Alveoli During Fetal Respiration." Dr. Albert H. Aldridge, New York, discussed "Retrodisplacement of the Uterus in Relation to Pregnancy, with Special Reference to the Technic and End Results of the Bissell Operation" before the society, April 19, among other speakers.

IOWA

District Meeting.—The annual meeting of the Iowa and Illinois Central District Medical Association was held at the Outing Club in Davenport, May 16. The speakers were:

Dr. August A. Werner, St. Louis, Anterior Pituitary Gonad Relationship in the Female.
Dr. John J. Shea, Memphis, Tenn., Management of Tonsil and Adenoid Surgery.
Dr. Italo F. Volini, Chicago, A Survey of Heart Disease.
Dr. Charles G. Farnum, Peoria, Ill., Some Original Medical Poems Entitled "Nonsense in Rhyme."
Dr. Walter C. Alvarez, Rochester, Minn., How Medicine Began.

KANSAS

Society News.—Dr. Earl C. Padgett, Kansas City, Mo., addressed the Shawnee County Medical Society, April 1, on "Calibrated Intermediate Skin Grafts."——The speakers before the Golden Belt Medical Society in Junction City, April 4, were Drs. Edward H. Skinner, Kansas City, Mo., on "Treatment and Management of Cancer of the Uterine Cervix"; Manuel Grodinsky, Omaha, "Infection of the Hand and Foot"; Robert M. Carr, Junction City, "Lipoid Pneumonia," and Leslie L. Saylor, Topeka, "Gas Bacillus Infection."

LOUISIANA

Personal.—Dr. Lewis C. Spencer, Harrisburg, has been appointed director of the Vermilion Parish Health Unit with headquarters in Abbeville, succeeding Dr. Murphy M. Sims, resigned. The unit was in charge of Dr. James A. Coleman, New Orleans, pending the appointment of Dr. Spencer.——Dr. Maurice Campagna, New Orleans, has been appointed medical director of the Orleans Tuberculosis Hospital.

State Medical Election.—Dr. Paul King Rand, Alexandria, was chosen president-elect of the Louisiana State Medical Society at its annual session in April and Dr. Christian Grenes Cole, New Orleans, was installed as president. Other officers are Drs. Henry Ashton Thomas, New Orleans; Daniel J. Murphy, New Orleans, and Dawson T. Martin, Donaldsonville, vice presidents, and Dr. Paul T. Talbot, New Orleans, secretary-treasurer.

MARYLAND

Personal.—Dr. Charles E. Gill, formerly of Boston, district health officer in the department of public health of Massachusetts, has been appointed health officer of Prince Georges County to succeed Dr. Archie B. Hooton, who resigned recently to go to South Carolina.——Dr. Walter B. Johnson, Cumberland, has been appointed health officer of Caroline County, with headquarters at Denton.——Dr. Alfred C. Moore was recently appointed full time medical health officer in the Baltimore health department. He is the seventh full time officer to be appointed.

State Medical Meeting and Election.—Dr. Harvey B. Stone, Baltimore, was chosen president of the Medical and Chirurgical Faculty of Maryland at its annual meeting in Baltimore, April 23-24, to take office Jan. 1, 1941. Dr. Edward P. Thomas, Frederick, is now president. Dr. Richard T. Shackelford, Baltimore, is secretary. The 1941 annual session will be in Baltimore, April 22-23. The scientific program at the recent session included the following speakers:

Dr. Thomas, The Hospital in the Smaller Centers.
Dr. Howard F. Kane, Washington, D. C., Prenatal Care.
Dr. Daniel S. Fisher, Salisbury, Meeting the Problem of the Premature Infant in Rural Districts.
Dr. Houston S. Everett, Baltimore, Some Gynecologic Aspects of Hypertension.

Dr. Edward D. Churchill, John Homans professor of surgery, Harvard Medical School, Boston, delivered one Trimble Lecture on "Pulmonary Resection" and Dr. Elliott P. Joslin, Boston, one on "The Growing Problem of Diabetes and How to Meet It." A series of "practical up-to-the-minute talks" was presented. Twenty speakers participated in the round table luncheon.

MASSACHUSETTS

Conference on Mental Hygiene.—The Western Massachusetts Conference on Mental Hygiene in Education and Social Work was held at the Hotel Kimball in Springfield, April 12-13. One session was devoted to education and one to social work. Dr. Frederick H. Allen, Philadelphia, addressed the dinner meeting on "Value of a Mental Hygiene Clinic to a Community," and Dr. Ira S. Wile, New York, a luncheon session on "Mental Hygiene in the Field of Education."

MICHIGAN

Society News.—Dr. James Milton Robb, Detroit, addressed the Genesee County Medical Society in Flint, recently, on "The Blocked Nose."——Dr. Albert H. Montgomery, Chicago, discussed "Abdominal Tumors in Childhood" before the Calhoun County Medical Society, April 2, in Battle Creek.——Dr. Elisha S. Gurdjian, Detroit, discussed "Cranial Injuries" before the Jackson County Medical Society in Jackson, April 16.

Alumni Reunion.—The annual clinic and alumni reunion of the Alumni Association of Wayne University College of Medicine will be held in Detroit, June 12-13. Round table discussions will be conducted by the following, all of Detroit:

New Drugs and Vitamins, Arthur H. Smith, Ph.D.
Preoperative and Postoperative Care, Dr. Alexander W. Blain.
Cardiorenal Diseases, Dr. Edgar H. Norris.
Gastrointestinal Diseases, Dr. Clyde E. Vreeland.
Fractures, Dr. Alfred D. La Ferte.
Obstetrics and Infant Resuscitation, Dr. Harold Henderson.

Reunions of the classes graduating in 1890, 1895, 1900, 1905, 1910, 1915, 1920, 1925, 1930 and 1935 will be held.

MINNESOTA

Course on Surgical Pathology.—The department of Pathology, University of Minnesota Medical School, Minneapolis, is offering a course on surgical pathology, June 17-July 26, designed to give a comprehensive review of the lesions shown in surgical specimens. Special emphasis will be placed on the diagnosis of tumors or lesions which may be confused with tumors. The daily class period is three hours but for any one who wishes to do extra work in some field material will be provided. The course is open to any one who has finished the regular medical course in pathology but is especially intended for hospital pathologists and those who wish a course to aid them in preparing for the examinations of the special boards. Establishment of a clinic in connection with this course is under consideration. Dr. James S. McCartney, associate professor of pathology, is in charge.

MISSOURI

Society News.—The Jackson County Medical Society was addressed, April 23, by Drs. Cecil G. Leitch and Russell W. Kerr on "Recent Advances in the Clinical Pathologic Interpretation of Diseases of the Blood with Special Attention Paid to Abnormal Bleeding, Vitamin K and Prothrombin Determination."——The Kansas City Southwest Pediatric Society was addressed, April 16, by F. Copeland Shelden, D.D.S., on "Some Considerations of Malocclusion and Facial Disharmony in the Growing Child," and Dr. Earl C. Padgett, "Some Phases of Reconstructive Surgery in Infancy and Adolescence."——The Association of Military Surgeons was addressed in Kansas City, April 17, by Lieut. Col. Daniel S. Lockwood, dental corps, U. S. Army, Station Hospital, Fort Leavenworth, Kan., on "Dental Practice in Military Service."——Dr. Frederick V. Emmert, St. Louis, discussed "Management of Difficult Labor Cases by the General Practitioner" before the St. Louis County Medical Society, April 24.——Dr. Allen O. Whipple, New York, addressed the Kansas City Academy of Medicine recently on "The Application of Chemistry to Certain Problems in the Preoperative and Postoperative Care of Surgical Patients."

MONTANA

Postgraduate Sessions in Obstetrics and Pediatrics.—The Montana State Medical Association and the Montana State Board of Health are conducting a series of postgraduate lectures throughout the state. The lecturers are Drs. William F. Mengert and Julian D. Boyd, associate professor of obstetrics and gynecology and associate professor of pediatrics, respectively, State University of Iowa College of Medicine, Iowa City. Their subjects are:

Normal Nutrition in Childhood.
Minor Ailments of Pregnancy.
Infant Feeding.
Management of Normal Labor; Puerperium.
Management of the Newborn; Prematurity.
Immediate Care of Newborn and Resuscitation; Cesarean.
Examination of Well Child Demonstration.
Treatment of Upper Respiratory Infections.
Abortion.
Treatment of Diarrheas.
Obstetric Hemorrhage; Placenta Praevia and Premature Separation of Normally Implanted Placenta; Postpartum Hemorrhage, Immediate (Atony, Retention, Tears) and Delayed.

The program was presented in Billings, May 24-25; Butte, May 27-28; Missoula, May 29-30; Kalispell, May 31-June 1, and will be continued in Havre, June 3-4; Great Falls, June 5-6; Lewistown, June 7-8, and Glendive, June 10-11.

NEW JERSEY

Society News.—Dr. Temple S. Fay, Philadelphia, addressed the annual meeting of the Passaic County Medical Society, Paterson, May 9, on "Refrigeration for the Control of Cancer." The meeting was held in cooperation with the local committee of the American Society for the Control of Cancer.——A symposium on communicable disease was presented before the Bergen County Medical Society at Bergen Pines, May 14, by Drs. Leverett D. Bristol, New York, speaking on poliomyelitis; Josephine B. Neal, New York, meningitis, and Philip M. Stimson, New York, recent developments in therapy.——Dr. James H. Means, Boston, addressed the section on medicine and pediatrics of the Academy of Medicine of Northern New Jersey, May 14, on "Some Endocrinopathies for Which We Have Successful Specific Treatment." Dr. Theodore Neustaedter, New York, addressed the section on obstetrics and gynecology, May 2, on "Present Day Status of the Value of the Endocrines in Sterility."——Drs. Charles Archie Crandell and Robert B. May, Greystone Park, addressed the Morris County Medical Society, Morris Plains, May 16, on "Alcohol and Its Relation to Mental Illness" and "Present Status of Shock Therapy" respectively.——Dr. Frederick D. Mott, Washington, D. C., and Mr. Harold L. Hoyt, New Brunswick, among others, addressed the Gloucester County Medical Society, Woodbury, May 16, on the Farm Security Medical Plan.

NEW YORK

Society News.—Dr. Frederick S. Wetherell, Syracuse, addressed the Onondaga County Medical Society, Syracuse, April 30, on "The Nodular (Adenomatous) Goiter—Medical or Surgical?"——Dr. Francis O. Harbach, Syracuse, addressed the Syracuse Academy of Medicine, May 21, on "Diagnosis and Management of Ovarian Dysfunction."——Dr. Ralph I. Lloyd, Brooklyn, addressed the Dutchess County Medical Society, Poughkeepsie, May 1, on "Proptosed Eye as a Diagnostic Problem."——Dr. Charles F. Branch, Boston, addressed the Medical Society of the County of Albany in Albany, April 24, on "Clinical and Pathological Aspects of Cholecystitis."——Dr. Norman H. Plummer, New York, addressed the Nassau County Medical Society, Garden City, April 30, on "Pneumonia: Diagnosis and Treatment."

New York City

Medical Administrator Wanted.—The department of hospitals of the city of New York has an opening as medical administrator to serve as deputy commissioner at a salary of $6,500. The deputy commissioner is exempt under the charter from competitive civil service. Citizenship and three years' residence in New York are required. The candidate's technical knowledge and administrative experience will rate 50 per cent in consideration for the position and 50 per cent will be rated for personal attributes. All applications must be made in writing and should be addressed to the Department of Hospitals, 125 Worth Street.

Courses in Venereal Diseases.—Practicing physicians are invited to register for practical clinical courses of observation in venereal diseases, to be given under the auspices of the bureau of social hygiene of the city department of health, beginning June 10. Six sessions will be devoted to syphilis and six sessions to gonorrhea, each series of six meetings to be limited to six physicians. Emphasis will be placed on practical clinical matters. There will be no lectures and no certificates will be awarded. The sole purpose of the courses is to give the practicing physician an opportunity for first hand knowledge of modern diagnosis and treatment of venereal diseases.

Symposium on Arteriosclerosis.—A symposium on arteriosclerosis will be presented in the Erdmann Auditorium, New York Post-Graduate Medical School and Hospital, June 6. The program will be:

Clive M. McCay, Ph.D., and Dr. John A. Saxton Jr., Effect of Retarded Growth on the Cardiovascular System and Other Systems in the Rat.

Dr. James G. Carr, Chicago, Relation and Importance of Arteriosclerotic Disease in the Heart of Humans.

Dr. Samuel Alcott Thompson, The Surgical Aspects for Treatment of Arteriosclerotic Heart Disease.

Dr. Beverly Chew Smith, The Surgical Treatment of Arteriosclerosis Obliterans.

Dr. Nelson W. Barker, Rochester, Minn., The Conservative Treatment of Arteriosclerosis Obliterans.

Society News.—Drs. John C. A. Gerster and Charles Gordon Heyd addressed the Medical Society of the County of Queens, April 30, on "Frozen Sleep Therapy in Cancer" and "Malignancy of the Large Bowel and Rectum" respectively. Dr. Robert L. Levy gave a Friday afternoon lecture before the society, April 19, on "Diagnostic and Therapeutic Aspects of Cardiac Pain."——Drs. Richard H. Overholt, Brookline, Mass., and Samuel Potter Bartley, Brooklyn, addressed the Medical Society of the County of Kings, April 16, on "Clinical Studies in Primary Malignancy of the Lung" and "Reconstruction of the Arm and Hand" respectively.——Dr. Harold E. Himwich, Albany, addressed the New York Diabetes Association, April 19, on "Physiology of Insulin."——Drs. William DeWitt Andrus and Francis B. Berry addressed the Medical Society of the County of New York, April 22, on "The Importance of Vitamin K in Certain of the Hemorrhagic States" and "Surgery in Pulmonary Tuberculosis" respectively.

OHIO

Honored for Years of Practice.—The staff of the Fostoria City Hospital gave a dinner recently in honor of Dr. John H. Norris, marking his sixty-third anniversary of medical practice. He has practiced sixty years in Fostoria.——Dr. Mifflin B. Brady, Cincinnati, was recently honored at a dinner celebrating the fiftieth anniversary of his entrance into medical practice.

New X-Ray Unit Dedicated.—St. John's Hospital, Cleveland, dedicated a new million volt x-ray therapy unit and broke ground for a new $2,000,000 nurses' home, recently. Speakers at the ceremony were Archbishop Joseph Schrembs, Cleveland; Dr. Max Cutler, director of the Chicago Tumor Institute, and Ernest E. Charlton, Ph.D., of the General Electric Research Laboratories, Schenectady, N. Y. The new unit is the second of its type, the first having been installed at Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, in June 1939. It is of the gas insulated type, with the transformer tank and accessory apparatus installed on the first floor of the hospital in the space formerly occupied by a private room. Treatment ports through which the rays are directed at the treatment area extend into a treatment cubicle on the ground floor. Dr. David Steel is the roentgenologist of the hospital.

Society News.—Dr. Edward O. Harper, Cleveland, addressed the Portage County Medical Society, Kent, in April on "The Common Neuroses."——Drs. Roy L. Kile, Cincinnati, and Samuel Gendelman, Manchester, addressed the Adams County Medical Society, West Union, April 17, on "Precancerous Skin Conditions and Other Common Skin Lesions" and "Newer Uses of Sulfanilamide and Its Derivatives" respectively.——Dr. William B. Morrison, Columbus, discussed "Curability of Cancer of the Stomach" at a meeting of the Perry County Medical Society, New Lexington, April 18.——Dr. George L. Sackett, Cleveland, addressed the Tuscarawas County Medical Society, New Philadelphia, April 12, on "Errors in Roentgen Diagnosis."——At a meeting of the Auglaize County Medical Society in St. Marys, April 11, the speakers were Dr. Robert E. Boswell, Dayton, on "Clinical Significance of Hoarseness"; Dr. Robert Kent Finley, Dayton, "Infections of the Hand," and Mr. James F. Conway, Cincinnati, "Professional Liability Insurance."

PENNSYLVANIA

Tuberculosis Society Election.—William W. Comfort, LL.D., president of Haverford College, Haverford, was elected president of the Pennsylvania Tuberculosis Society at its recent annual meeting in Williamsport, succeeding Dr. William Devitt, Allenwood. Dr. John J. Shaw, state secretary of health, Harrisburg, was named honorary vice president; Dr. Devitt and John H. Scheide, Titusville, vice presidents, and Dr. Charles Howard Marcy, Pittsburgh, secretary.

Society News.—Dr. Henry D. Lafferty, Philadelphia, addressed the Dauphin County Medical Society, May 7, on "Sudden Death Within Twenty-Four Hours After Delivery."——Dr. James H. Corwin, Washington, addressed the Washington County Medical Society, May 8, on treatment of fractures.——At a meeting of the Delaware County Medical Society, Chester, May 9, the speaker was Dr. Hugo Roesler, Philadelphia, on "Cardiac Diagnosis Without the Aid of Instruments."——Dr. Edmund R. McCluskey, Pittsburgh, addressed the Fayette County Medical Society, Uniontown, May 2, on "Laryngotracheobronchial Croup with Pulmonary Abscess."

Philadelphia

Alumni Reunion.—The alumni luncheon of the University of Pennsylvania at the University Club, May 15, was addressed by Dr. Alfred Newton Richards, professor of pharmacology at the school. His subject was "Research in Medicine at the University of Pennsylvania."

Schireson Sentenced to Eighteen Months in Penitentiary.—Dr. Henry Junius Schireson, a plastic surgeon, was sentenced, May 8, to two concurrent terms of eighteen months

in the Lewisburg Federal Penitentiary, according to the newspapers. He was permitted to remain at liberty on $20,000 bail pending an appeal to the U. S. Circuit Court of Appeals. Schireson was convicted, March 27, of concealing $130,000 in assets before filing in bankruptcy in 1937 and swearing a false oath. He was sentenced on both counts of the conviction. His bankruptcy petition listed assets of $334 and debts of $33,901. The $130,000 he was said to have hidden from his creditors assertedly was transferred to his wife, it was stated. In urging a substantial sentence, Asst. U. S. Atty. Thomas J. Curtin said that Dr. Schireson pleaded guilty twice and was convicted once of selling narcotics illegally in Baltimore; served ten months in the Allegheny County Workhouse for conspiracy to cheat and defraud and six months in Rikers Island Prison, New York, for illegal practice of medicine. In 1930 Schireson's license to practice medicine in Illinois was revoked by the state department of registration after a hearing in Chicago on charges of malpractice. According to the report, Miss Sadye Holland, Chicago, testified that she went to Schireson to have a scar removed from her arm and that he induced her to undergo an operation to straighten her legs. Complications after the operation necessitated the amputation of both legs, it was stated. In 1933 the Illinois Supreme Court reversed the license revocation, holding that incompetent testimony was permitted at the hearing before the medical board.

SOUTH CAROLINA

State Medical Election.—Dr. George M. Truluck, Orangeburg, was named president-elect of the South Carolina Medical Association at its annual meeting in Charleston, April 30-May 2, and Dr. William L. Pressly, Due West, became president. Dr. Robert E. Seibels, Columbia, was elected vice president and Dr. Edgar A. Hines, Seneca, reelected secretary for the thirty-first year. The 1941 meeting will be in Greenville.

Special Society Meetings.—Dr. Richard B. Josey, Columbia, was elected president of the South Carolina Pediatric Association at the annual meeting in Columbia April 8. Dr. Wilburt C. Davison, Durham, N. C., was the guest speaker on "Pediatric Therapeutics."——The South Carolina Urological Association met in Columbia recently with Dr. Silas Raymond Thompson, Charlotte, N. C., as the guest speaker in the afternoon on "The Present Status of Prostatic Surgery" and Dr. Lloyd G. Lewis, Baltimore, in the evening on "The Neurological Bladder."

VIRGINIA

District Meeting.—The spring meeting of the Southwestern Virginia Medical Society was held in Radford, April 17. Drs. Isaac A. Bigger and William B. Porter, Richmond, conducted a round table discussion on "Infections, General and Local, from the Surgical and Medical Standpoint." At an evening session Dr. Walter C. Alvarez, Rochester, Minn., was the guest speaker on "Hints in the Treatment of Indigestion" and Dr. Harry W. Bachman, Bristol, presented a paper on "Fibroma of the Thyroid Gland."

WISCONSIN

Society News.—At a meeting of the Wood County Medical Society, Wisconsin Rapids, April 4, the speakers, all of Wisconsin Rapids, were Drs. Rogers E. Garrison on "Pulmonary Stenosis"; Wallace L. Nelson, "Pyelonephritis in Pregnancy," and Leland C. Pomainville, "Rocky Mountain Spotted Fever."——Dr. Ralph M. Waters, Madison, addressed the Brown-Kewaunee-Door Counties Medical Society, Green Bay, April 11, on "The Relation of Morbidity to Anesthesia."——The Milwaukee Society of Clinical Surgery was addressed at a dinner meeting at the University Club, May 28, by Drs. Harry Beckman on "Physiologic Aspects of Therapy"; Hugh A. Cunningham, "Clinical Indications for Oxygen Administration"; Ralph M. Waters, Madison, "Clinical Response to Oxygen Therapy," and Mr. James I. Banash, Chicago, "Mechanical Considerations of Oxygen Therapy Apparatus."

CANAL ZONE

Society News.—Dr. Clarence A. Mills, Cincinnati, addressed the Medical Association of the Isthmian Canal Zone at a recent meeting on "Climatic Influences over Combustion Level and Resistance to Infection." Dr. Mills also made plans for studies in tropical physiology to be carried out in cooperation with isthmian health agencies.

GENERAL

New Bulletin for Committee on Maternal Welfare.—The American Committee on Maternal Welfare is publishing a bulletin entitled *The Mother* to keep its members informed regarding its activities, to serve as a means of disseminating information on the plans and programs of maternal welfare which are being carried out in various communities. The first number appeared in April. It is not intended to be a medical journal or to present scientific articles. Offices of the committee on maternal welfare are at 650 Rush Street, Chicago.

Swindler of Physicians Now in Prison.—Oscar Hanson, Fort Worth, Texas, was recently incarcerated in the prison at East Lansing, Mich., following his apprehension for several swindles of physicians. Hanson's method was to buy glasses from oculists throughout the country, usually giving a check to the amount of $30. He usually signed the name W. C. Curran in endorsing the checks, asking for the difference between the amount of the check and the price of the glasses in cash. He did not return for the glasses. When apprehended, Hanson admitted his guilt.

American Hospital in Paris Needs Funds.—An appeal has been issued for funds for the American Hospital in Paris by Winthrop W. Aldrich, chairman of the French and British Relief Funds. The hospital's facilities are being taxed to the utmost by the wounded soldiers and thousands of refugees. According to the announcement in the New York *Times*, the French and British Relief Funds, which have been aiding this hospital since the outbreak of the war, will at once send over all contributions that are given. Checks should be made out to the French and British Relief Funds and sent to their offices at 46 Cedar Street, New York.

Alumni Reunions in New York.—The annual luncheon of Phi Rho Sigma Fraternity will be held at the Hotel Belmont Plaza, New York, June 12, during the annual session of the American Medical Association. Alumni of Jefferson Medical College will hold a dinner at the Hotel Murray Hill, June 12. Dr. Thomas F. Duhigg is chairman of arrangements. He may be addressed at the hotel. Alumni of Northwestern University Medical School, Chicago, will hold a dinner at the Longchamps Restaurant, New York, June 12. Dr. Robert McGrath, New York, is chairman in charge. The Alpha Mu Pi Omega Medical Fraternity will hold a luncheon in New York at the University of Pennsylvania Club, June 12.

Human Serum Association.—The annual meeting of the American Human Serum Association will be held at the Willard Parker Hospital, New York, June 10. The following program will be presented:

Drs. Maurice A. Hardgrove and Daniel B. Claudon, Milwaukee, Incidence of Syphilis Among Convalescent Serum Donors in Milwaukee.
Drs. Aims C. McGuinness and Joseph Stokes Jr., Philadelphia, Use of Repeated Injections of Normal Pooled Serum in the Control of Upper Respiratory Infections.
Drs. Paul J. Dwan and Erling S. Platou, Minneapolis, Bacteriostatic Properties of Scarlet Fever Convalescent Serum, Antitoxin and Hyperimmune Human Scarlet Fever Serum.
Dr. William Thalhimer and Sophronia Myron, New York, Fate of Incompatible Iso-Agglutinins Which are Injected Intravenously.

A round table on blood substitutes will be conducted by Dr. Virgil H. Moon, Philadelphia; Dr. Sidney O. Levinson, Dr. Frank E. Rubovits Jr. and Dr. Heinrich Necheles, Chicago; Dr. Max M. Strumia, Bryn Mawr, Pa., and John Elliott, Salisbury, N. C. If time permits Dr. Stokes will introduce a round table on viruses.

Fellowships for Biological Research.—The Zoological Society of San Diego announces two scholarships available to advanced graduate students for research work at the Biological Research Institute on some phase of animal biology (concerned primarily with such branches as pathology, bacteriology, parasitology, physiology, comparative anatomy, comparative biochemistry, animal nutrition or animal psychology). The stipend of each scholar is $1,000 annually. Since the institute is not directly affiliated with any university, it is desirable that the recipient of the scholarship work under the direction of the department from which he applies, and preference will be given to postdoctorate investigators or to candidates for an advanced degree, it being understood that only the thesis or dissertation requirements or parts thereof can be fulfilled at the Zoological Research Laboratory. Applications should be forwarded to Charles R. Schroeder, D.V.M., Zoological Society of San Diego, Balboa Park, San Diego, Calif., before June 15.

Chemical Society Awards.—Eric G. Ball, Ph.D., associate in medicine, Johns Hopkins University School of Medicine, Baltimore, received the Eli Lilly Award of $1,000 for research in biologic chemistry at the spring meeting of the American Chemical Society in Cincinnati, April 8. Dr. Ball reported the discovery that riboflavin is a constituent of the enzyme xanthine oxidase. A native of England, Dr. Ball is 36 years old and took the degree of doctor of philosophy in physiologic chemistry at the University of Pennsylvania in 1930. Mary E. Pennington, Ph.D., New York, a consultant and adviser on handling the transportation and storage of perishable foods, received the Francis P. Garvan gold medal presented through the chemical society for distinguished service to chemistry. Dr. Pennington was chief of the food research laboratory of the bureau of chemistry in the U. S. Department of Agriculture from 1908 to 1919 and was manager of research for a commercial firm before going into private work as a consultant.

Broncho-Esophagological Association.—The twenty-third annual meeting of the American Broncho-Esophagological Association will be held at the Waldorf-Astoria Hotel, New York, June 5, under the presidency of Dr. Lyman G. Richards, Boston. Among the speakers will be:

Dr. Clyde A. Heafly, Rochester, N. Y., Surgical Management of Intractable Cardiospasm.
Dr. Millard F. Arbuckle, St. Louis, Bronchoscopic Treatment of Lung Abscess.
Dr. Samuel J. Pearlman, Chicago, Sarcocarcinoma of the Esophagus: Is There Such an Entity?
Drs. Chevalier L. Jackson and George S. McReynolds Jr., Philadelphia, Anesthesia for Peroral Endoscopy.
Dr. Mervin C. Myerson, New York, Bronchoscopy in Tuberculous Children.
Dr. George R. Brighton, New York, Laryngotracheobronchitis.
Dr. Frances W. Davison, Danville, Pa., Some Observations on the Control of Humidity and Temperature in Oxygen Tents.
Dr. Herrmann E. Boxer, Buffalo, Collapse Without Clinical Signs of External Pressure.

The New York members of the association will hold special clinical demonstrations at various hospitals in the city June 14.

Winners in Health Conservation Contest.—Winners in the annual city and rural health conservation contests conducted by the U. S. Chamber of Commerce in cooperation with the American Public Health Association were announced recently. These awards are made on the basis of the manner in which a community is meeting its health needs and are not necessarily made to the healthiest communities. The winners in the city contest were Milwaukee for cities of more than 500,000 population, Memphis for cities between 250,000 and 500,000, New Haven and Hartford, Conn., tied for cities between 100,000 and 250,000, Newton, Mass., for cities between 50,000 and 100,000, Greenwich, Conn., and Plainfield, N. J., tied for cities between 20,000 and 50,000, and Englewood, N. J., for cities under 20,000. Counties winning awards were Northeastern Division, Alger-Schoolcraft Health Unit, Michigan; Eastern Division, Fayette County, Ky.; Southeastern Division, Lauderdale County, Miss.; South Central Division, St. Mary's Parish, La., and Western Division, Wasco County, Ore. Special awards for maintaining their high standards went to Davidson County, Tenn.; El Paso County, Texas; Pike County, Miss.; Shawnee County, Kan., and Woodbury County, Iowa.

American Neisserian Medical Society.—The sixth annual session of the American Neisserian Medical Society will be held at the Shelton Hotel in New York, June 10-11, under the presidency of Dr. Nels A. Nelson, Boston. Included among the speakers will be:

Dr. Irwin I. Lubowe, New York, Larry Landau, B.S., and Daniel Miskin, Ph.D., Venereal Disease Prophylaxis—An Ideal Prophylactic and Technic.
Dr. William Ray Jones, Minneapolis, Correlating the Micropathology and the Clinical Findings in Gonorrhea.
Drs. John F. Mahoney, Cassius J. Van Slyke, and Rolla R. Wolcott, Staten Island, N. Y., Sulfathiazole and Sulfmethylthiazole in the Treatment of Gonococcal Infection.
Drs. Jacob Bernard Bernstine and George W. Bland, Philadelphia, Gonorrhea Complicating Pregnancy.
Dr. Eleanor Louise R. Westphal, Ruth L. Charles, A.B., and Dr. Charles M. Carpenter, Rochester, N. Y., Development of Sulfapyridine-Fast Strains of Gonococcus.
Dr. Wolfgang A. L. Casper, New York, The Biochemistry of the Gonococcus and Its Practical Importance.
Dr. Walter M. Brunet, Chicago, Is Gonorrhea a Bacteremia?
Drs. Alfred Cohn, Boris A. Kornblith, New York, and Arthur Steer, Brooklyn, Observations on Untreated Patients with Gonococcal Infection and Those Receiving Chemotherapy.
Dr. Max Leopold Brodny, Boston, An Improved Rubber Sheath for the Prevention of Venereal Infection.

Annual "Doctor's Day" Proposed.—Senator Bilbo of Mississippi on May 15 introduced into the U. S. Senate a joint resolution proposing that June 22 of each year be designated "Doctor's Day" in commemoration of "the great sacrifices and untiring efforts and devotion of the members of the medical profession in performing their duty to humanity by caring for the sick and injured in times of individual need and during periods of pestilence, war and other disasters and catastrophes." By the resolution, which was referred to the Committee on the Library and has now been reported favorably, the President would be authorized and requested to issue a proclamation annually calling on officials of the government to display the United States flag on "Doctor's Day" and inviting the people of the country to observe the day in an appropriate manner. In a speech in the Senate urging the passage of the resolution, Senator Bilbo paid tribute to the achievements and services of physicians. He quoted a part of the Hippocratic Oath to express the philosophy of the ethical physician and cited instances of the devotion of the physician to his calling. He concluded his address with the following peroration:

> It seems to me altogether fitting and simple poetic justice would seem to demand that this long belated recognition be conferred; that we should duly create and record, among the memorabilia of our great nation, a day of commemoration for the great cause the doctor represents. That the observance of Doctor's Day may become a part of the customs of our enlightened age, a day of observance for not only the people of this age but even unto posterity.
>
> Mr. President and gentlemen of the Senate, permit me earnestly to urge the passage of this joint resolution so that at least one day in each and every year shall be dedicated to the doctor, humanity's greatest benefactor, and on that day may every citizen send a card, a telegram or a letter of love and appreciation; send him flowers or other appropriate tokens of love and friendship, or, better still, drop in at his office or his home and personally convey to him a message of esteem and gratitude.

Meeting of Neurologists.—The sixty-sixth annual meeting of the American Neurological Association will be held at the Westchester County Club, Rye, N. Y., June 6-8, under the presidency of Dr. Foster Kennedy, New York. Included among the many speakers will be:

Drs. Lewis J. Pollock and Isidore Finkelman, Chicago, Changes in the Demarcation Current of Injured Muscle During Tetanus Produced by Stimulation with Induced Current.
Dr. Louis Casamajor, Joseph Roy Smith, Ph.D., Dr. Kate C. Constable and Charles W. F. Walter, B.S., Correlated Clinical and Electro-Encephalographic Findings in Children with Focal Convulsive Seizures.
Drs. Eli Jefferson Browder and H. Russell Meyers, Brooklyn, Comparative Pathophysiological Alterations Produced by Increased Intraventricular Pressure.
Drs. Howard C. Naffziger and Robert B. Aird, San Francisco, Prolonged Jugular Compression—A New Diagnostic Test of Neurological Value.
Dr. Norman H. Jolliffe, New York, Effects of Vitamin B Therapy in Paralysis Agitans.
Drs. Harold G. Wolff, Alvin M. Cahan, and George A. Schumacher, New York, Studies of Migraine: The Contrast of Vascular Mechanisms in Headache and Prheadache Phenomena.
Dr. Walter E. Dandy, Baltimore, Results Following Complete Extirpation of Acoustic Tumors by the Unilateral Approach.
Drs. Tracy J. Putman, New York, and Hiram Houston Merritt, Boston, The Chemistry of Anticonvulsant Substances.

Association for the Surgery of Trauma.—The second annual session of the American Association for the Surgery of Trauma will be held at the Claridge Hotel, Atlantic City, N. J., June 7-8, under the presidency of Dr. Edgar L. Gilcreest, San Francisco. The speakers will include:

Dr. Philip H. Kreuscher, Chicago, Treatment of Fresh Wounds.
Drs. Fraser B. Gurd and Laurie H. McKim, Montreal, Use of Bipp and Liquid Paraffin in the Treatment of Wounds.
Dr. Samuel Potter Bartley, Brooklyn, Reconstruction Surgery of the Hand.
Dr. Donald M. Glover, Cleveland, A Summary of Fifteen Years Experience with the Tannic Acid Treatment.
Dr. Anatole Kolodny, New York, Traction Paralysis of the Brachial Plexus.
Dr. Louis G. Herrmann, Cincinnati, Diagnosis and Treatment of Post-Traumatic Osteoporosis.
Dr. Herbert H. Davis, Omaha, The Possible Etiological Relationship Between a Single Trauma and Malignant Tumor.
Dr. Edward A. Kilbuwski, Baltimore, Preservation of Tendon Function by the Use of Skin Flaps.
Dr. Robert P. Dobbie, Buffalo, Avulsion of Lower Biceps Tendon.
Dr. LeRoy Long, Oklahoma City, Bilateral, Independent Rupture of the Long Head of the Biceps Brachii.
Dr. Nelson J. Howard, San Francisco, Pathologic Changes Induced in Tendons Through Trauma and Their Accompanying Clinical Phenomena.
Dr. Hubbard T. Buckner, Seattle, Treatment of Fractures of the Upper End of the Tibia Involving the Knee Joint.
Drs. Fenwick Beekman and John E. Sullivan, New York, Some Observations on Fractures of Long Bones in Children.
Dr. Clay Ray Murray, New York, An Evaluation of the Operative Treatment of Fractures.
Dr. Willis C. Campbell, Memphis, Tenn., Fixation of the Onlay Graft by the Use of Vitallium Screws.
Dr. Charles S. Venable, San Antonio, Texas, The Application of Vitallium in Compound Fractures.
Dr. Harry E. Mock, Chicago, Trauma and Low Back Pain.
Dr. John E. Raaf, Portland, Ore., Treatment of Patients with Protruded Intervertebral Disks.
Dr. Angus L. Cameron, Minot, N. D., The Compatibility Factor in the Transfusion of Blood.
Dr. Earl C. Padgett, Kansas City, Mo., Early and Late Care of Severe Injuries of the Face and Jaws.
Dr. William T. Coughlin, St. Louis, Wounds Involving the Skeleton of the Face.

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 27, 1940.

The Revision of the British Pharmacopeia

The last issue of the British Pharmacopeia was published in 1932 and revision every ten years was intended, alternating with the decennial revision of the United States Pharmacopeia. The next pharmacopeia was to appear in 1941, five years after the eleventh revision of the United States Pharmacopeia, but owing to war conditions the authorities have changed their general policy, and it is now intended to delay publication of the new British Pharmacopeia, although the work of revision goes on. In a lecture to the Pharmaceutical Society Dr. C. H. Hampshire, secretary of the Pharmacopeia Commission, described the work, which has been going on steadily since 1936. For most of the committees it has reached a stage at which publication is possible. Already four reports have been published and others are in preparation, but everything is subject to reconsideration. The efficiency of the new British Pharmacopeia is to be increased by including standards and assays not only for crude drugs and chemicals but also for as many galenical preparations and compounded drugs as possible. Some of these are already described in the Codex of the Pharmaceutical Society. Substances which are the subjects of patents were not formerly described unless licenses to manufacture had been granted to a number of firms. The rule has now been adopted that certain substances may be included if the patents are due to expire within a few years.

The new organic chemicals include sulfanilamide, which is recommended as the best known of the sulfonamides free from patent complications. Mandelic acid and calcium mandalate are included, as are calcium levulate for giving calcium by injection. Parachlorometacresol, urethane, vanillin, beta-phenylisopropylamine and its sulfate, cyclopropране, pyridine-beta-carboxylic acid diethylamide and theophylline and ethylenediamine. Parachlorometacresol is included for its use as a bactericide in sterilizing solutions for injection and as a preservative in certain solutions. Because of the difficulties arising from using various names for ointments containing metallic mercury, it is recommended that the ointment of the current British Pharmacopeia containing 30 per cent should be continued with the synonym "mercury ointment" and that a diluted ointment containing 10 per cent and carrying the synonym "blue ointment" should be introduced with the note "When mercury ointment or mercurial ointment is prescribed or demanded, diluted ointment of mercury shall be supplied unless, on inquiry, it is ascertained that ointment of mercury is required."

The new inorganic chemicals proposed are calamine, bismuth subgallate, dried magnesium sulfate, dried sodium sulfate, potassium chloride and sodium metabisulfite (for use as an antioxidant for addition to solution of epinephrine hydrochloride and injection of procaine and epinephrine). Calamine is described as basic zinc carbonate colored with ferric oxide. The test on ignition excludes the form containing added zinc oxide.

The principal vitamin preparations recommended are standard concentrated solutions of vitamin A and D, an oil standardized to contain vitamins A and D, halibut liver oil containing not less than 30,000 units of vitamin A per gram, and crystalline thiamine hydrochloride to replace the adsorbate of vitamin B. Added to the serologic group are biologically tested preparations of antitoxinum histolyticum, toxinum staphylococcium detoxicatum, toxinum tetanicum detoxicatum, vaccinum choleraicum, vaccinum staphylococcium, insulinum protaminatum cum zinco and progesteronum. The regulations provide for the control of biologically tested preparations throughout the British Empire.

Medical Publishing and the War

The war so far has had little effect on the publication of medical books. New books and new editions show no falling off. On medical journals it has had a perceptible but not great effect. Like other periodicals, they have become smaller. This is mainly due to scarcity of paper (which may soon be rationed) and falling off in advertisements.

The *British Medical Journal* has dropped its eight-page key to medical literature, and the supplement (dealing with medical politics) is incorporated instead of being an inset. Immediately on the declaration of war the number of pages (text and advertisements) shrank from an average of 144 to 100. By way of compensation smaller type is now used in various sections of the *Journal*, notably correspondence, editorials and annotations, notes on books and obituaries. The number of original articles submitted fell off in the early weeks of the war but soon returned almost to normal, much exceeding the available space. The policy has been adopted of giving preference and priority to articles of topical value relating to military medicine, surgery, hygiene and administration. Local news has been cut down drastically. Only two journals have suspended publication for the duration of the war—the *Liverpool Medico-Chirurgical Journal* and the *Birmingham Medical Review*. The former is the organ of the Liverpool Medical Institution, meetings of which continue as usual. In spite of the large number of physicians on military service, the medical societies are holding their meetings much as usual.

The Food Situation

As previously stated in THE JOURNAL, there is plenty of food in the country and our imported supplies are coming in practically unhindered, thanks to the convoy system and command of the sea. Since imported supplies amount to two thirds of the normal food consumption, they use a large amount of shipping, some of which it is desired to divert to importation of munitions. Moreover, the convoy system increases the length of voyages and so reduces the amount of goods that can be carried in a given time. More food is therefore being grown in the country. Two million more acres are now under cultivation and in the towns allotments, where a man can in his spare time cultivate a large part of the vegetables required by his family, have been provided on a large scale.

Much attention is being given to dietetics, so that food can be used in the best and most economical way. There is great room for improvement. Ordinarily too much meat is eaten and other dietetic mistakes are made. A campaign of instruction is going on, with the backing of the government. The people are being told that their traditional Sunday dinner of roast beef and Yorkshire pudding might disappear without the nation suffering. In a series of lectures Dr. J. C. Drummond, professor of biochemistry, University of London, pointed out that "the Oslo health meal" (entire wheat bread, milk, salad and apple) had in English schools given better results as regards both the health and the development of the children than the usual dinner of meat and cooked vegetables. The working class housewife has been learning that whole wheat bread is better than white bread for her children. The last war taught us the value of scientific research with regard to food. The fine research machinery here is now all available to the government and is being used. Germany's home front collapsed in the last war not only because of shortage of food but because of failure to realize the importance of the newly discovered facts of nutrition. Professor Drummond regarded fats as unimportant if, instead, green vegetables and energy foods were taken. Their deprivation was a hardship purely for

psychologic reasons. Physiologically we could do without them. Professor Drummond appears to be alone in holding this view.

There has been some rise in food prices, but they have been kept low as regards bread and other essential foods by a government subsidy of $250,000,000 per annum. In the last war subsidized foods rose in price by 133 per cent and unsubsidized foods by 284 per cent. A small book, "Feeding the People in Wartime," has been published by two agriculturists, Sir John Orr and D. M. Lubbock. They point out that there is some loss in converting milk into butter and cheese. The full value is obtained only by consuming it as liquid milk. Milk should be subsidized so as to bring the present level of consumption by the poor of a quarter of a pint daily up to two thirds of a pint, the level of the rich. The potato they regard as of special value for health. An acre of potatoes yields twice as much food as an acre of wheat. So the potato is the best insurance against food shortage. It should be subsidized for increased consumption. Consumption of potatoes in Britain is only half what it is in some other countries, such as Belgium and Germany.

PARIS

(From Our Regular Correspondent)

April 27, 1940.

Poliomyelitis Virus in Sewer Water

During the summer months of 1939, Stockholm had a poliomyelitis epidemic in which seventy cases were reported. Dr. Kling, director of the serotherapeutic institute of Stockholm, inoculated a number of monkeys with samples of the contents of the city's sewer waters. Repeated inoculation tests on these animals elicited positive reactions. He thus confirmed the observations of Paul, Trask and Culotta made at Charleston, S. C., that viruses eliminated in fecal discharges may survive for a certain length of time in sewer waters.

Malingering

Disease simulation is one of the characteristics of war psychosis. It constantly changes its methods and its maladies. To the old devices found in all armies and at all times, and brought to a high degree of perfection among colonial troops, has been added the technic of malingering that has received its inspiration from recent medical discoveries. Icterus, for example, is induced by picric acid, 0.25 Gm. sufficing to color the tissues and the mucosa from eight to fifteen hours after ingestion. Repetition of the doses provokes symptoms of true catarrhal jaundice. It is not rare for a false icterus to be superimposed on a toxic icterus. However, disease simulation is met by improved methods of detection, such as that of detecting picric acid in the urine by the Kohn-Abrest reaction or picramic acid by Derrien's reaction. Albuminuria is simulated by taking white of egg just before the examination or by adroitly adding it to the urine at the time of the examination. In such cases, however, microscopic examinations fail to disclose the cytologic substances of nephritis. Furthermore, white of egg contains abundant and diversified flora that is easily discovered. In one case, reported by Maurice Perrin to a gathering of army surgeons, the dilution of white of egg was kept in a small rubber flask that could be easily concealed and used. Arrhythmia, tachycardia and auriculoventricular dissociations are induced by strong doses of caffeine of from 0.8 to 1.5 Gm. This is easily detected in the urine. Disease simulators have learned the thermogenic properties of nitrate derivatives of the benzene nucleus and use them to provoke fever. Paget reported a case of glycosuria due to the injection of 5 mg. of phlorhizin. Barbiturates have been employed to cause coma. Various chemical intoxications have been detected, whenever suspected, by close observation and repeated tests. Assumed deafness and blindness have been unmasked by specialized methods as well as induced abscesses, cutaneous ulcerations due to common vesicant substances, voluntary mutilations and conjunctivitis. Nervous and mental simulations are the most difficult to uncover. Observation by itself does not suffice. It requires an infinite amount of patience and skill on the part of the physician to trap the offender. Often friendly counsels will prevent a recurrence of false representations.

Deaths

The decease of Pierre Marie has been reported. His work lay in the field of anatomopathologic and psychologic clinical research. He is regarded as probably the last representative of the school of Charcot.

Professor Weinberg of the Pasteur Institute and member of the Academy of Medicine is dead.

BERLIN

(From Our Regular Correspondent)

April 19, 1940.

Life Expectancy After Amputation

Investigations made by the Hamburg orthopedist zur Verth of the life span of persons who lost a leg or an arm upset the view largely entertained that such persons do not live as long as persons possessed of all their limbs. His conclusions are based on a large observational material (60,000 living and 3,600 dead). Most of the amputations were performed between the nineteenth and forty-fourth year. Zur Verth collected data to show the number of those amputated who were dead thirteen years later and compared these data with the normal mortality rate at each given age (19-44). The results were surprising. The mortality rate of the amputated, computed for each age level, was 3.68 per cent as compared with the mortality rate of 5.98 per cent for the rest of the male population. Differentiated according to the site of amputation, amputation of the arm presented a 4.15 per cent, amputation of the leg a 3.51 per cent and amputation of the arm and leg a 3.89 per cent mortality. The same results were obtained from observations on all those amputated during the World War and not confined to the age levels of 19 to 44. Accordingly, the life span of those amputated is more favorable at all age levels than that of the general population.

Blood as Legal Evidence

In a former issue of THE JOURNAL (Nov. 11, 1939, p. 1824), an official decision was reported on the legal value of blood tests for paternity. In the meantime further conversations have been conducted with experts in the field of serology and heredity that led to the following results: "Determination of the blood group constitutes a suitable method of excluding the paternity of a certain person in certain cases. Objections advanced against hereditary transmission or on the basis of possible mutations and modifications do not limit this fact." By "certain cases" are meant those blood groupings that admit conclusions "with absolute certainty."

Heritability of Pernicious Anemia

M. Werner systematically examined fifty-seven consanguineous groups with 525 members anamnestically, clinically and by laboratory tests. In 9 per cent of the groups a second case of pernicious anemia was discovered. This can no longer be regarded as purely accidental. Special attention was given to a prepernicious diathesis, such as the presence of subacidity, blood modifications, tendency to anemia, leukopenia or lymphocytosis, paresthesia and glossal changes. In 5 per cent of the group such a diathesis was found. A significant element was its appearance in 15 per cent of siblings and in only 1 per cent of the more distant relatives. It could not be determined whether this diathesis would evolve into true pernicious anemia or whether the condition is to be regarded as that of forms which had not attained their complete development. Neither

constitutional characteristics nor definite predispositions could be ascertained. The possibility, however, of a causal connection between pernicious anemia and essential hypochromemia cannot be denied, though confirmatory observations are lacking. Four cases suggested this connection. As a result of these studies it is assumed that pernicious anemia represents a dominant hereditary predisposition with relatively limited manifestations. Marriage, or the begetting of offspring, from the point of view of race hygiene, is to be discouraged in certain cases of pronounced or of double familial heredity. Persons who show a prepernicious diathesis should be treated with liver.

Deaths

Prof. Werner Spalteholz, anatomist, died at the age of 79. He spent his entire university life in Leipzig. His school atlas of human anatomy appeared in 1895 and was repeatedly revised. He invented the method of making human and animal substances transparent, a method used frequently in health hygiene exhibits and for classroom demonstrations.

Prof. Hans Ziemann died at the age of 74. He was a noted student of tropical diseases. His monograph on malaria and blackwater fever is well known. He discovered the causative agent of frambesia and also Trypanosoma vivax.

Prof. August Borchard died February 19 in his seventy-sixth year. Together with Schmieden he published a textbook on war surgery and subsequently with Garrè a textbook on surgery, which passed through several editions. For many years he was editor of the *Zentralblatt für Chirurgie*.

Prof. K. B. Lehmann, hygienist, died in his eighty-second year. A pupil of Pettenkofer, he established himself at the University of Würzberg in 1887 and retired in 1932. His special interests, evidenced by numerous publications, lay in the physiology of nutrition, industrial hygiene and bacteriology.

BUENOS AIRES

(From Our Regular Correspondent)

April 13, 1940.

Nutrition in Spanish America

In accordance with the recommendations of the third International Conference on Nutrition, which met in Buenos Aires (THE JOURNAL, Feb. 3, 1940, p. 425), a new course of studies was inaugurated March 27 in the Instituto Nacional de la Nutrición of Buenos Aires. Dr. R. M. Ortiz, president of the Argentine Republic, and other dignitaries of the state attended the opening ceremonies. Dr. Ortiz has shown a special interest in national nutrition and was instrumental in creating scholarships to enable physicians of Spanish-American countries to continue their studies in the national institute of Buenos Aires. Several scholarship holders from Mexico, Brazil, Uruguay and Paraguay registered for the courses. Prof. Pedro Escudero, director of the institute, in the inaugural lecture pointed out that the natives, centuries ago, had extensive knowledge of cultivation of the soil, of plants and of the conservation of perishable foods. Their food was chiefly vegetarian. The speaker attributed the collapse of native civilizations in Peru and Mexico and the lack of vigorous resistance to the Spanish invaders to a vegetable diet with its impairment of physical and mental vigor. After the conquest, food conditions as well as social conditions became steadily worse for the natives. Escudero also analyzed the present conditions of nutrition in Argentina, Chile, Colombia, Ecuador, Mexico and Brazil. His conclusions were that the present day nutrition of more than 50 per cent of Latin American people was insufficient in quantity, excessive in carbohydrates and deficient in fats and proteins. Likewise the mineral and vitamin food levels were low. Hence the majority of people in Spanish America were chronically underfed and suffered the degenerative effects of pronounced protein deficiency. The solution of these problems, he said, was not to be sought in culinary recipes and public kitchens but had to be attacked by governmental social welfare. However, expert advice and cooperation were needed through all the stages from food production to food consumption.

Osteopetrosis in Argentina

Osteopetrosis is endemic in Madras, British India, and known as dental fluorosis in children. In October 1938 it was discussed in the sessions of the international headquarters of public health in Paris, at which time H. T. Dean, dental surgeon of the U. S. Public Health Service, Dr. Frank McCallum of Australia and Dr. M. T. Morgan of the British Ministry of Health read papers. In Argentina cases of osteopetrosis are constantly observed in a central district of the country. Though not hazardous to life, it induces increasingly in the course of the years bone disturbances and ailments due to fluorine salts in the drinking water. Since also the ligaments and surrounding tissues are affected, the bones lose their flexibility and elasticity, giving rise to motor disturbances, diffused pains and symptoms that resemble arthritis and rheumatism and may lead to invalidism. Investigations conducted by Drs. Capizzano, Valotta and Megy disclosed roentgenologically skeletal osteopetrosis in a large number of persons. The chemical analysis of the fluorine content of the water confirmed the observations. The disease manifests itself about the twentieth year. Pains due to the disease occurred mostly in the vertebrae, shoulders and hips.

There are several ways of attacking the problem. Water testing more than 1.5 mg. per thousand fluorine content could be cautioned against. Without reflecting on the chemical methods employed to neutralize fluorine-bearing water, it seems imperative to seek water sources that contain only minimal amounts of fluorine. Nor can the sanitary aspects of the situation be separated from the social. There is danger that without proper education the population of these fertile zones may become panicky and leave. Incidentally, the towns in these zones have been in existence for only twenty or thirty years, so that data of the effects of fluorine salts in water after long continued use on cattle and agriculture are incomplete. The national department of public health has appointed a clinical-radiologic-chemical research commission and is awaiting financial appropriations to begin to function. The governor of the province in which the affected districts lie has taken an interest in the problem. The examination of recruits in one of these districts showed that 73 per cent of 1,300 young men had characteristic striated teeth.

Marriages

LOGAN EVERETT SAWYER, Durham, N. C., to Miss Winifred Lontz Maxwell in Clarksburg, W. Va., April 28.

GERHARD ECKMANN, Herrin, Ill., to Miss Sylvia Vilma Crosby at University City, Mo., May 5.

JAMES LEVI THOMSON, Lexington, Ky., to Miss Dorothy Mae Knowles of Woodard, N. C., May 15.

WILLARD CARTER GOODPASTURE, Chicago, to Miss Dorothy Ruth Bangs of Salina, Kan., May 4.

JOSEPH H. HUMPERT, Covington, Ky., to Miss Margaret Jane Leslie of Maysville, May 14.

GEORGE KNOX SPEARMAN, Anniston, Ala., to Miss Oleta Billingsley in Jasper, March 24.

WILLIAM GRAVES WOODIN, Dunkirk, N. Y., to Miss Barbara Mason of New York, May 18.

RALPH OLIN BOWDEN to Miss Margaret Blun, both of Savannah, Ga., May 3.

ROBERT KLEIN, Shanksville, Pa., to Miss Johanna Schwelb of Pittsburgh, May 2.

JEROME A. HILGER to Miss Helen Backer, both of St. Paul, January 20.

Deaths

Joshua Rosett ● New York; University of Maryland School of Medicine, Baltimore, 1903; instructor, associate and assistant professor of neurology at Columbia University College of Physicians and Surgeons from 1919 to 1934 and since 1934 professor of neurology; member of the American Neurological Association and the Association for Research in Nervous and Mental Disease; served in the World War, during which time he was a member of the committee for public information and was sent to Russia with the American Expeditionary Forces; at various times a fellow of the Mount Sinai Hospital and the Montefiore Hospital, assistant attending neurologist to the Vanderbilt Clinic and Roosevelt Hospital, adjunct neurologist to the Neurological Institute; author of "Mechanism of Thought, Imagery and Hallucination" published in 1939, "Intercortical Systems of the Human Cerebrum" published in 1933 and many scientific works; aged 64; died, April 4, in Merida, Yucatan, Mexico, of carcinoma of the stomach.

Gorham Bacon, Yarmouth Port, Mass.; Bellevue Hospital Medical College, New York, 1878; member of the Massachusetts Medical Society; fellow of the American College of Surgeons; formerly professor of otology at the Columbia University College of Physicians and Surgeons; at one time aural surgeon to the New York Eye and Ear Infirmary; consulting otologist to the Roosevelt and Minturn hospitals, Hospital for Ruptured and Crippled, New York, and Vassar Brothers' Hospital, Poughkeepsie, N. Y.; author of "Manual of Otology"; aged 85; died, March 5.

Joseph Francis Geisinger ● Richmond, Va.; University College of Medicine, Richmond, 1912; member of the Southern Surgical Association, the American Association of Genito-Urinary Surgeons and the American Urological Association; fellow of the American College of Surgeons; past president of the Virginia Urological Society; professor of clinical urology at the Medical College of Virginia; served during the World War; urologist to Stuart Circle Hospital; aged 56; died, April 15, of arteriosclerosis and dissecting aneurysm.

George Hall Conklin, Superior, Wis.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1888; member of the State Medical Society of Wisconsin; served during the World War; at one time health commissioner and county physician; formerly medical director and superintendent of the Middle River Sanatorium, Hawthorne; aged 73; died, March 10, in St. Mary's Hospital, of uremia, leukemia and pyelonephritis.

Simon Pendleton Kramer, Fort Thomas, Ky.; Medical College of Ohio, Cincinnati, 1888; at one time professor of clinical surgery at the University of Cincinnati College of Medicine; past president of the Academy of Medicine of Cincinnati; member of the American Neurological Association; veteran of the Spanish-American and World wars; surgeon to the Cincinnati Hospital from 1910 to 1925; aged 72; died, April 12, in the United States Marine Hospital, Baltimore.

John Burnworth Critchfield, Lock Haven, Pa.; Medico-Chirurgical College of Philadelphia, 1898; veteran of the Spanish-American and World wars; formerly member of the state legislature; for many years chief of the tuberculosis division of the state health department; member of the Medical Society of the State of Pennsylvania; aged 64; died, March 25.

Arthur H. Cleveland, Chadds Ford, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1889; Medico-Chirurgical College of Philadelphia, 1899; formerly emeritus professor of laryngology at the Medico-Chirurgical College of Philadelphia; at one time on the staff of the Presbyterian Hospital, Philadelphia; aged 75; died, March 26.

Gilbert Mombach ● Cincinnati; Medical College of Ohio, Cincinnati, 1909; member of the Central Association of Obstetricians and Gynecologists; past president of the Cincinnati Obstetrical Society; aged 52; on the staff of the Jewish Hospital, where he died, April 9, of pneumococcic meningitis, type III, mastoiditis and labyrinthitis.

Leckinski Ware Spratling ● Medical Director, Captain, U. S. Navy, retired, Waverly, Ala.; University of the City of New York Medical Department, 1890; entered the navy April 16, 1890, and retired March 12, 1921, on his own application after thirty years' service; fellow of the American College of Surgeons; aged 72; died, March 20.

John Peter Miller ● Grand Forks, N. D.; Baltimore Medical College, 1906; past president of the North Dakota Academy of Ophthalmology and Otolaryngology; served during the World War; on the staffs of the Deaconess Hospital and St. Michael's Hospital; aged 60; died, April 18, of coronary thrombosis.

John Allen Caruthers, Baton Rouge, La.; University of Texas School of Medicine, Galveston, 1899; fellow of the American College of Surgeons; aged 64; died, April 10, at the Baton Rouge General Hospital, of a fractured hip and arm due to a fall and cerebral hemorrhage and paralysis agitans.

Frederick Morell Houghtaling, Sandusky, Ohio; Baltimore Medical College, 1896; member of the Ohio State Medical Association; city and county health officer; served during the World War; aged 66; died, April 17, in the United States Marine Hospital, Cleveland, of cerebral hemorrhage.

Isaac Cuthbert Evans Jr., Columbus, Ga.; Medical College of Alabama, Mobile, 1899; formerly county physician, county health officer, city physician and health officer; on the staff of the Muscogee Tuberculosis Sanatorium; aged 67; died, April 19, of cerebral hemorrhage and arteriosclerosis.

Thomas F. Black ● Providence, R. I.; College of Physicians and Surgeons, Baltimore, 1890; an Affiliate Fellow of the American Medical Association; formerly on the staffs of the Rhode Island Hospital and St. Joseph's Hospital; aged 76; died, April 2, of arteriosclerosis and heart disease.

Clayton James Hyslop, Chippewa Falls, Wis.; Northwestern University Medical School, Chicago, 1916; member of the State Medical Society of Wisconsin; served during the World War; aged 49; died, March 13, in St. Joseph's Hospital, of cirrhosis of the liver and diabetes mellitus.

William Samuel Knapheide, Quincy, Ill.; Chaddock School of Medicine, Quincy, 1889; Long Island College Hospital, Brooklyn, 1890; member of the Illinois State Medical Society; for many years on the staff of the Blessing Hospital; aged 74; died, April 8, of cerebral hemorrhage.

Presley Louis Pound, Wyandotte, Mich.; Tulane University of Louisiana School of Medicine, New Orleans, 1916; served during the World War; aged 47; died, April 1, in the Veterans Administration Facility, Dearborn, of hypertension, arteriosclerosis and myocarditis.

John Martin Elderdice, Salisbury, Md.; University of Maryland School of Medicine, Baltimore, 1905; served during the World War; aged 61; on the staff of the Peninsula General Hospital, where he died, April 10, of rheumatic cardiovascular disease.

George Adam Stover, South Boston, Va.; University College of Medicine, Richmond, 1900; member of the Medical Society of Virginia; past president and secretary of the Halifax County Medical Society; aged 66; died, April 6, of cerebral hemorrhage.

William M. Bogart ● Stevenson, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1900; past president of the Jackson County Medical Society; aged 64; died, April 7, in the Barnes Hospital, St. Louis, of carcinoma of the lung.

Seth Hattery, Massillon, Ohio; Bellevue Hospital Medical College, New York, 1879; member of the Ohio State Medical Association; bank president; formerly member of the city council and board of health; aged 90; died, April 3, of arteriosclerosis.

George Bailey Goheen, Coalport, Pa.; Jefferson Medical College of Philadelphia, 1901; member of the Medical Society of the State of Pennsylvania; for many years member of the board of education; aged 67; died, March 23, of diabetes mellitus.

Julius Jesse Du Bose, Maplesville, Ala.; Atlanta Medical College, 1895; member of the Medical Association of the State of Alabama; aged 70; died, April 7, in the Baptist Hospital, Selma, of adenoma of the prostate and bronchopneumonia.

Milford M. Brubaker, Troy, Ohio; Eclectic Medical Institute, Cincinnati, 1896; member of the Ohio State Medical Association; aged 67; on the staff of the Stouder Memorial Hospital where he died, April 10, of coronary thrombosis.

Louis Francis Kelling ● Lakefield, Minn.; St. Louis College of Physicians and Surgeons, 1898; veteran of the Spanish-American War; aged 65; died, April 6, of septic pulmonary embolism following extraction of abscessed teeth.

Walter Thomas Diver ● Troy, N. Y.; Albany (N. Y.) Medical College, 1907; fellow of the American College of Surgeons; on the staff of the Troy Hospital; aged 56; died, April 8, in Miami, Fla., of coronary thrombosis.

Ruey O. Ford, Gaylord, Mich. (licensed in Michigan in 1900); member of the Michigan State Medical Society; aged 78; on staff of the Mercy Hospital, Grayling, where he died, March 30, of intestinal obstruction.

William Pinson Roberts, Dothan, Ala.; Memphis (Tenn.) Hospital Medical College, 1904; member of the Medical Association of the State of Alabama; on the staff of the Frasier-Ellis Hospital; aged 67; died, March 2.

Jesse M. Brooke, Peebles, Ohio; Starling Medical College, Columbus, 1896; member of the Ohio State Medical Association; aged 69; died, April 2, of acute dilatation of the heart following an acute gastro-enteritis.

Lewis Greenberg ● New York; University and Bellevue Hospital Medical College, New York, 1916; on the staffs of the Beth Israel Hospital and the Hospital for Joint Diseases; aged 53; was found dead, March 10.

David Shuler Black, Columbia, S. C.; Memphis (Tenn.) Hospital Medical College, 1895; member of the South Carolina Medical Association; aged 68; died, April 1, of carcinoma of the lung and chronic nephritis.

Grace Hovey Griffin, Houston, Texas; University of Buffalo School of Medicine, 1917; formerly on the staff of the Rochester (N. Y.) State Hospital; aged 54; died, April 2, of chronic lymphatic leukemia.

Roy Irwin Curry, Mansfield, Ohio; Western Reserve University School of Medicine, Cleveland, 1922; member of the Ohio State Medical Association; aged 46; died suddenly, April 3, of coronary thrombosis.

Clyde D. Elder, Marietta, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1905; member of the Medical Association of Georgia; on the staff of the Marietta Hospital; aged 63; died, March 9.

Bond Stow, Crestwood, N. Y.; Chicago Medical College, 1889; at one time on the staff of the Metropolitan Hospital, New York; aged 75; died, March 28, in Washington, D. C., of coronary thrombosis.

Maurice A. Hoover, Grand Island, Neb.; Medical College of Indiana, Indianapolis, 1881; aged 81; died, March 4, in the Veterans Administration Facility, Lincoln, of arteriosclerosis and heart disease.

Peter Nicklaus Delus, Louisville, Ky.; Hospital College of Medicine, Louisville, 1899; veteran of the Spanish-American War; aged 63; died, April 7, in the United States Marine Hospital of uremia.

Richard M. Jones, Louisville, Ky.; University of Louisville Medical Department, 1893; member of the Kentucky State Medical Association; aged 70; died, April 1, of cerebral hemorrhage.

William Lippencott Woodruff, Saranac Lake, N. Y.; Medical College of Alabama, Mobile, 1896; aged 76; died, March 8, in the Saranac Lake General Hospital of bronchopneumonia.

Clarence V. Gilmore, Hickory, Miss.; Louisville (Ky.) Medical College, 1893; member of the Mississippi State Medical Association; aged 69; died, April 3, in Meridian of pneumonia.

George Albert Causey, Swifton, Ark.; Memphis (Tenn.) Hospital Medical College, 1900; member of the Arkansas Medical Society; served during the World War; aged 66; died, March 20.

James William Stockman, Red Cloud, Neb.; Hahnemann Medical College and Hospital, Chicago, 1903; aged 66; died, March 6, of cardiac asthma and dilatation of the descending aorta.

Lester Lance Lightner, Ideal, Ga.; Southern College of Medicine and Surgery, Atlanta, 1913; member of the Medical Association of Georgia; aged 57; died in April of pneumonia.

Robert Samuel Martin, San Francisco; Rush Medical College, Chicago, 1895; aged 77; died, March 13, in the Lane Hospital of bronchopneumonia, arteriosclerosis and nephritis.

John Kay, Perrin, Mo.; Northwestern Medical College, St. Joseph, 1893; at various times county health officer, county physician and county coroner; aged 70; died, March 15.

Otto B. Ilch, Hamburg, Mo.; Marion-Sims College of Medicine, St. Louis, 1898; served during the World War; formerly county coroner; aged 71; died, April 12, of carcinoma.

Arthur Furman Kraetzer ● New York; Cornell University Medical College, New York, 1916; on the staff of the Knickerbocker Hospital; aged 48; was found dead, March 4.

Seldon William Cohn, Fulton, Ky.; Medico-Chirurgical College of Philadelphia, 1899; member of the Kentucky State Medical Association; aged 61; died, February 6.

Ellen Dell Dresser, Theresa, N. Y.; Hahnemann Medical College and Hospital, Chicago, 1888; aged 77; died, March 30, of carcinoma of the right breast and the liver.

Karl Herbert Hall, East St. Louis, Ill.; Atlanta (Ga.) College of Physicians and Surgeons, 1901; served during the World War; aged 62; died, April 14, of pneumonia.

Lois Leverett Nelson, Berkeley, Calif.; Cooper Medical College, San Francisco, 1890; aged 82; died, March 21, of coronary thrombosis and arteriosclerosis.

Bascom Hugh Birney, Burkes Garden, Va.; Rush Medical College, Chicago, 1886; aged 82; died, April 19, in Miami, Fla., of coronary occlusion and arteriosclerosis.

Autilio John D'Alleva ● Detroit; Wayne University College of Medicine, Detroit, 1937; aged 27; was found dead in April of carbon monoxide poisoning.

Edwin Leopold Rose, New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895; aged 73; died, March 17.

Don A. Anderson, Indianapolis; Medical College of Indiana, Indianapolis, 1895; member of the Indiana State Medical Association; aged 67; died, March 17.

Frank Andrew Smith, Winnipeg, Man., Canada; Manitoba Medical College, Winnipeg, 1906; aged 58; died, April 11, in St. Joseph's Hospital of uremia.

General Marion Center, Campton, Ky. (licensed in Kentucky in 1894); member of the Kentucky State Medical Association; aged 77; died, March 5.

Charles Sidney Seely, Los Angeles; State University of Iowa College of Medicine, Iowa City, 1897; aged 62; died, March 18, of coronary embolus.

William T. Cameron, Mace, W. Va.; College of Physicians and Surgeons, Baltimore, 1889; aged 73; died, April 12, in Mill Creek of cerebral hemorrhage.

Edgar Forrester, Toronto, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1884; L.R.C.P., Edinburgh, Scotland, 1884; died, March 4.

Ernest Lynwood Blackmun ● Stockton, Calif.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1901; aged 66; died, March 3.

J. Edward Bryson, Wayland, Mich.; Physio-Medical College of Indiana, Indianapolis, 1895; aged 78; died, March 31, of cerebral hemorrhage.

William A. Marsh, Green Lawn, W. Va.; College of Physicians and Surgeons, Baltimore, 1904; aged 79; died, April 17, of cerebral hemorrhage.

Franklin V. Walker, San Bernardino, Calif.; Barnes Medical College, St. Louis, 1906; aged 76; died, March 31, of chronic myocarditis.

Solomon Morgan Brian, Winnfield, La.; Memphis (Tenn.) Hospital Medical College, 1907; aged 61; died in April of coronary occlusion.

George N. Butchart, Hibbing, Minn.; Omaha Medical College, 1895; aged 68; died, April 6, of arteriosclerosis and coronary occlusion.

Lewis Payton, Muncie, Ind.; Curtis Physio-Medical Institute, Marion, Ind., 1883; aged 88; died, April 13, of mitral valvular disease.

John Bohlander, Cincinnati; Cincinnati College of Medicine and Surgery, 1883; aged 79; died, April 19, of chronic nephritis.

James R. Phillips, Almo, Ky.; University of Louisville Medical Department, 1892; aged 82; died, April 7, of pneumonia.

Henry Benjamin Treakle, Richmond, Va.; Baltimore University School of Medicine, 1893; aged 65; died, March 30.

Carl Henry Senn ● Williamsport, Pa.; Medico-Chirurgical College of Philadelphia, 1901; aged 62; died, March 12.

Prosper Deming White, Detroit; Trinity Medical College, Toronto, Ont., Canada, 1894; aged 68; died, March 23.

Clem C. Ballard, Gap Mills, W. Va.; Maryland Medical College, Baltimore, 1905; aged 61; died, March 31.

William H. Weeks, Kennesaw, Ga.; Chattanooga (Tenn.) Medical College, 1906; aged 68; died, March 15.

John C. Jacob, Detroit; Detroit College of Medicine, 1895; aged 67; died, April 22, of chronic myocarditis.

Samuel Stith, Pensacola, Fla.; Kentucky School of Medicine, Louisville, 1894; aged 69; died, March 9.

Harry Stanton McCard, Baltimore; Rush Medical College, Chicago, 1900; aged 66; died, March 19.

Robert E. Johnson, Lebanon, Tenn. (licensed in Tennessee in 1889); aged 83; died, March 29.

Correspondence

THE VALIDITY OF RECORDS OF PRIVATE PATIENTS IN THE EVALUATION OF RESULTS OF TREATMENT

To the Editor:—In a special article entitled "The Drug Therapy of Epilepsy" in THE JOURNAL, April 6, page 1347, Dr. William G. Lennox makes suggestions tending to show that the "records" from which I obtained the data on which I based the conclusions of the efficacy of sodium bromide in preventing the seizures of patients suffering from epilepsy (Remissions of Attacks in Epilepsy Treated with Sodium Bromide, THE JOURNAL, Feb. 26, 1938, p. 632) "may be artificially optimistic." Dr. Lennox, I assume, meant that optimism born of the conclusions reached from my data was "artificial," since, as he estimates, the data were derived from a material which was not homogeneous but was loaded with mild cases. I quote his paragraph dealing with this suggestion:

> Statistics concerning patients receiving active medical attention need to be studied with respect to their source. On the one hand the records of clinicians may be artificially optimistic. Thus Pollock in 1937 saw eighty-five patients whom he had treated with bromides for more than a year. Of these, thirty-nine (46 per cent) had been without seizures for a year or more. He must have been treating an unusually mild group, for 72 per cent of the eighty-five had a previous history of a remission lasting a year or more. Probably the surviving clientele of any physician is weighted with favorable cases, for epileptic patients are notorious shoppers. They know that time is the essence of help and quite properly refuse to be under the treatment of one physician year after year if they do not experience improvement. Also the greater his reputation (and his fees) the fewer the number who can afford to continue profitless treatment.

To meet the objection appearing further in his article that spontaneous remissions of a year or longer occur without apparent cause in about 20 per cent of patients (a statement the basis of which I would like to know), it is of interest to point out that, in the group referred to while under treatment by sodium bromide, eleven patients had had no convulsions for more than one year, ten for more than two years, four for more than three years, five for more than four years, one for more than five years, three for more than seven years and five for more than eight years when last seen in 1937.

To support his conclusion that I must have been treating an unusually mild group, Lennox cites the prolonged remissions lasting for a year or more in 72 per cent of the eighty-five cases treated with sodium bromide. Combining the thirty-nine cases already described in which terminal remissions were brought about with the group in which remissions lasting over a year were brought about and then for one reason or another an attack occurred, there were sixty-one cases (71.7 per cent). The remissions had lasted more than one year in seventeen cases, more than two years in twelve cases, more than three years in eight cases, more than four years in five cases, more than five years in three cases, more than six years in two cases, more than seven years in four cases, more than eight years in six cases, more than nine years in one case and more than ten years in three cases. Thus, in twenty-two cases in which seizures had been stopped by the use of sodium bromide for periods of from one to more than ten years, with a mean of more than three years, an attack occurred often because the patient had after a long period of freedom from attacks neglected his medication.

That patients do not continue ineffectual treatment is almost axiomatic, but before it can be held that the good results reported from my material were brought about because a large portion of the total number of patients whom I had treated had gone elsewhere because of the inefficiency of the treatment, leaving only a small number whom I had benefited, it must be shown, if one is comparing the efficacy of treatment by sodium bromide with that of dilantin sodium, that only a small number of ineffectually treated patients leave the practices of Dr. Lennox and the other authors whose statistics he seems to accept without question, and that larger portions of effectively treated patients remain in their practices. To assume that when good results are obtained by the use of sodium bromide the material must be loaded with mild cases and that when successful results are obtained with dilantin sodium it is not so loaded seems to me to be illogical.

It is well known that in a consulting practice only a small portion of the total number of patients seen continue to be treated by the consultant. The majority are sent back to the physician who referred the patient.

During the year 1937, in the material on which I reported, there were only eleven patients whom I first saw that year and had been treated by me for less than a year. This would indicate that the accrual of patients to the number I would continuously treat was eleven for that year. Since a consultant's practice grows from year to year, I think it would be fair to judge this as representing a yearly accrual for the preceding ten years. In ten years I should have accrued a little over a hundred patients. It would appear, therefore, that not a very large proportion of the patients whom I would regularly treat had left my practice.

In the total group of ninety-six cases there were thirty-three in which the cause of the convulsive disorder was attributed to a disease or injury of the brain. I maintain that the group reported on represents a fair cross section of extramural cases treated by any physician in private practice.

There is little difference between the surviving clientele of a physician in private practice and that in an extramural clinic. In fact, in my experience patients attending the Montgomery Ward Clinics of Northwestern University Medical School change their allegiance far more frequently than do private patients.

In the clinic for epilepsy, usually numbering between 100 and 120 active cases, 127 new patients were admitted and 103 patients failed to return from 1937 to 1940. It cannot be said that the thirty-odd patients who leave the clinic yearly do so because their treatment is ineffectual. In 1937 thirty-eight patients who had withdrawn from the clinic during the preceding year were canvassed by the social service department: six patients had died and four could not be found; of the remaining twenty-eight, no further attacks had occurred in fourteen (50 per cent).

Results equal to or better than mine have been reported from the Clinic for Epilepsy of the Northwestern University Medical School by Stone and Arieff (Stone, T. T., and Arieff, A. J.: Remissions in Epileptic Patients Treated with Sodium Bromide in an Outpatient Clinic, *Arch. Neurol. & Psychiat.* **43**:299 [Feb.] 1940). There were sixty patients who had been treated for more than a year with sodium bromide. In thirty-three cases (55 per cent), all attacks were stopped for a year or more in thirteen, for more than two years in nine, for more than three years in eight and for more than four, five and nine years in one each. In thirty-eight additional cases treated from six to twelve months, attacks had stopped for a period of six or more months in fourteen cases. Thus, of the ninety-eight cases treated for six months or longer, the convulsions had been stopped in forty-seven cases for more than six months (48 per cent).

If the material both in private practice and in extramural clinics is overloaded with mild cases, is it any less thus overloaded when the patients are treated by dilantin sodium than by sodium bromide? Would it not be wise to wait for a period of a few years and then, when only a few patients leave the practice of physicians and clinics because of the efficacy of dilantin sodium, attempt another guess as to the overloading of my material with mild cases?

Dr. Lennox rightly says that statistics concerning patients receiving active medical attention need to be studied with respect to their source. Would it not be fair at least to suggest that, although the greater the reputation (and the fees) of a physician the more likely would patients not continue profitless treatment, leaving behind the mild cases, nevertheless a physician of greater reputation, whatever his fees may be, might treat the patient and make observations of results more efficiently than some others? This does not imply that because Dr. Lennox mentions my name in the quoted paragraph I have identified myself with such a physician and hasten to say that my fees have never been known to frighten any one away.

LEWIS J. POLLOCK, M.D., Chicago.

LEAD AS A HAZARD

To the Editor:—Two months ago, in the January 20 issue of THE JOURNAL, you published an article by Drs. Rathmell and Smith to which I must take exception, particularly as it followed so soon after a paper by Dr. H. B. Williams in which also many experts doubt the diagnosis. In this article the child is supposed to have had acute lead poisoning due to only an infinitesimal quantity of lead obtained from orange juice put into an aluminum container. It seems to me unwise to give great publicity to a so-called established case of lead poisoning in a child who is said to have ingested less than 0.02 mg. of lead. Most persons ingest more than that every day in their drinking water, with absolutely no known deleterious effects. An analysis of the dishes was mentioned but no report on this was made, and it is obvious that no accusation can be made without that, particularly as aluminum dishes should contain practically no lead. Besides, lead does not usually give the acute symptoms ascribed to it in this article. One substance that I know of, namely antimony, may give gastrointestinal symptoms such as vomiting, but to incriminate an infinitesimal amount of lead without knowing whether antimony was present in the juice is distinctly unscientific.

I write this vigorous letter because too much publicity is being given to minor exposures to lead these days. This is particularly true with regard to lead taken by mouth, which is so much less toxic than inhaled lead. That lead may produce deleterious effects there can be no question, but there is no evidence that a small fraction of a milligram can produce the effects ascribed to it in this article.

JOSEPH C. AUB, M.D., Boston.

GLOVE DERMATITIS

To the Editor:—In THE JOURNAL, April 20, page 1523, appeared an article by Drs. Norwood and Evans on glove dermatitis, which I read with considerable interest. On Dec. 4, 1939, I saw a patient with the same type of vesiculation, exudation, crusting and scaling as that described by Norwood and Evans. This patient gave a history of contact with tetra-ethyl lead in gasoline while working in and around the oil fields near our city. It may be of interest that the rationale of my mode of therapy consisted of ultraviolet irradiation to the volar and dorsal surface of both hands for sixty seconds at daily intervals for five days. As a supplement, I used salicylic acid 2 per cent, phenol 1 per cent, and Saratoga and rose water ointment in sufficient quantity for a base. The use of white cotton gloves were advocated as mittens to retain the ointment.

The surprising feature was the response to this treatment and regimen. The patient was discharged December 11 as having made an uneventful recovery, after five exposures to ultraviolet radiation and the local ointment described.

CHARLES C. VERSTANDIG, M.D., Houston, Texas.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

REFRACTORY PERIOD AFTER TUBERCULIN TEST

To the Editor:—Could you give me references on the refractory period following the intradermal test for tuberculosis in cattle? Do the same principles hold good in man as in cattle when the latter are "plugged" just before the visit of the veterinarian?

G. H. Hoxie, M.D., Kansas City, Mo.

ANSWER.—The "plugging" or "doping" of cattle with tuberculin for fraudulent purposes came into being soon after it was learned by Gutman of Russia, Bang of Denmark and Pearson, Cotton and Russell of the United States that some animals extensively diseased with tuberculosis and in or approaching the terminal stage did not react to the tuberculin test. This was believed to be due to the fact that they were already saturated with the products of the tubercle bacillus. It was then learned that the subcutaneous administration of one or more large doses of tuberculin would have the same effect; that is, the animal would not react to the usual dose of tuberculin even though tuberculosis was present. Certain dishonest cattle dealers and importers saw that they might profit through buying tuberculous cattle at a low price, give them one or more large doses of tuberculin and sell them as nontuberculous at a high price. This practice was carried out extensively in Europe and the Americas. Dr. Charles H. Mayo, who purchased a herd of thirty-four thoroughbred cattle in the East was probably deceived in this manner. When he bought them he insisted that they be tested with tuberculin and none reacted. However, on the first testing after they had reached his farm sixteen reacted strongly to the test.

In the early part of this century the cattle breeders of Argentina were putting forth every effort to keep tuberculosis from their herds. They were willing to pay enormous prices for nontuberculin reactors imported from Europe. Dealers took advantage of this fact, bought tuberculous cattle in Europe and arranged to have large doses of tuberculin administered aboard ship. When animals arrived in Buenos Aires they were always kept in quarantine for forty days, after which they were officially tested with tuberculin. Nonveterinary inspectors were employed to guard them while under quarantine. However, detectives discovered that during the night these inspectors were administering large doses of tuberculin so that at the end of the forty day period of quarantine the animals would not react to the official test (*Am. Vet. Rev.* **32**:170 [Nov.] 1907).

In this country "plugging" continued to be a serious practice (*ibid.* **35**:386 [July] 1909). Many cattle breeders lost large sums of money this way. When it was learned what was actually happening, Malm discovered that the desensitization is not permanent (*Rev. gén. de méd. vet.*, 1903, p. 401). In fact, it persisted only a few weeks. Therefore veterinarians advocated that buyers purchase animals subject to the results of tuberculin tests administered a certain period (usually sixty days) after they had been received from the seller.

Hauptmann showed that, when small but constant doses of tuberculin are administered at intervals of approximately two months, sensitiveness of the tissues disappears after the second or third administration and does not reappear for from seven to ten months. However, by this method the time element was too great for dealers and importers.

Vallee (*Ann. d l'Inst. Pasteur* **18**:545, 1904) made a careful study of this phenomenon with the thought of discovering some way to outwit dishonest persons. The usual method of administering the tuberculin test consisted of, first, taking the animal's temperature to be sure that it was normal (the normal temperature of cattle is approximately 101.3 F.) and then to introduce subcutaneously 0.25 cc. of tuberculin. Beginning six hours later, the temperature of the animal was taken at least once every three hours over a period of from sixteen to twenty-four hours. If tuberculosis was present the temperature elevation began to appear in from six to ten hours but occasionally as late as from sixteen to eighteen hours. A rise of 2 degrees was considered to be a definite reaction. However, Vallee found that by administering a dose twice as large as usual, that is, 8 cc. of a 1:10 dilution of tuberculin for large animals and 4 cc. of this dilution for small animals, a definite temperature elevation occurred when tuberculosis was present much sooner in

"plugged" cattle than in others. Indeed, he began to take the temperature two hours after the test was administered and every two hours thereafter to about the fourteenth hour. Any animal whose temperature increased 1.5 degrees following the administration of tuberculin he regarded as tuberculous and any from 1.5 degrees down to 0.8 degree he considered suspicious.

Moussu, who first used the intradermal test for cattle, while Mantoux developed it for man, found that a subcutaneous injection of a massive dose of tuberculin at the time of or just before the administration of the intradermal test interfered considerably with the reaction of the latter.

In testing human beings with tuberculin it has long been known that, regardless of the method used, severe acute forms of tuberculosis, such as meningitis, pneumonia and miliary disease, as well as extensive and terminal stages of chronic tuberculosis, interfere with or actually render useless the tuberculin test; that is, with such large numbers of tubercle bacilli present in the body large quantities of tuberculoprotein are liberated and the tissues are desensitized. One may desensitize human tissues by graduated doses of tuberculin beginning with those so small as to produce no reaction and gradually increasing the dose until large amounts of tuberculin can be administered with no reaction. Obviously, in the latter part of this desensitization process the usual test dose of tuberculin meets no response on the part of the tissues. Indeed, Rich has done some valuable experimental work in desensitization in an attempt to remove the dangers of allergy when reinfections occur. Probably the administration of one or a few large doses of tuberculin would temporarily desensitize the tissues in man, as it does in animals. However, no well informed physician would take the risk of administering such doses to a human subject unless by further research an entirely safe method is devised.

CARDIAC DILATATION AND HYPERTROPHY IN ARTERIOVENOUS ANEURYSM

To the Editor:—Why is it that the heart responds by enlargement to the increased demands made on it, as in arteriovenous aneurysm? Is the biologic mechanism involved known?

Thomas I. O'Brein, M.D., Philadelphia.

Answer.—The causal relationship between arteriovenous aneurysm and cardiac damage was first demonstrated experimentally by Mont R. Reid (*Bull. Johns Hopkins Hosp.* **31**:43 [Feb.] 1920) and since then numerous investigators in both the clinical and the experimental field have established that this is true. The heart of a patient with an arteriovenous fistula responds by dilatation at first and then hypertrophy, since there is an abnormal strain placed on the heart because of the short circuiting of the arterial blood into the venous channels. This increases the venous return to the heart and therefore the load that must be cared for by it. If the cardiac output per stroke is roughly 60 cc. and 20 cc. is lost directly into the venous circulation, the venous return will be proportionately greater and the heart will attempt to expel this increased amount, in accordance with Starling's law (Starling, E. A.: Linacre Lecture "The Law of the Heart," London, 1918). This is accomplished by increased filling and hence dilatation of the heart. It has been estimated that of the enlargement of the heart in arteriovenous aneurysm from 75 to 95 per cent is dilatation, which is a quickly reversible process. If the dilatation is present long enough, hypertrophy ensues and is more slowly reversible.

To substantiate this theory of the hypertrophy of the heart further, experimental observations have been undertaken to determine how great the cardiac output is in such cases. Harrison, Dock and Holman (*Heart* **11**:337 [Dec.] 1924) showed that in one of their experimental subjects the cardiac output rose 100 per cent. Carter Smith (*Arch. Int. Med.* **48**:187 [Aug.] 1931) found that the cardiac output of a patient with an arteriovenous fistula decreased 58 per cent following closure of the opening. Absolute results of the determination of the cardiac output in such cases are not accurate, owing to the passage of a good portion of the blood (containing the determining substance used, such as acetylene) directly back into the venous system, but comparative results such as these are worth considering. The amount of increase in cardiac output is usually directly proportional to the caliber of the vessels involved, the size of the opening and the proximity to the heart. Emile Holman (Arteriovenous Aneurysm, Macmillan Company, New York, 1937) and others have reported an increase in the circulating blood volume in such cases, but Reid and McGuire (*Ann. Surg.* **108**:643 [Oct.] 1938) failed to confirm these observations as occurring in cases in which cardiac enlargement but not congestive failure has developed.

Lewis and Drury (*Heart* **20**:373, 1932) state that it is their opinion that the cause of the cardiac enlargement is due to an impaired coronary blood flow as a result of the lowered diastolic pressure. Others, however, have shown that the coronary blood supply is decreased little if at all in such conditions. Since the work of the heart is increased, the lack of a corresponding increase in coronary flow leads to a relative coronary flow insufficiency and this factor aids in the development of dilatation and later hypertrophy of the heart.

To summarize, the main factor in the development of cardiac dilatation and its hypertrophy in arteriovenous aneurysm is the increase in the amount of blood that the heart has to pump. It follows, therefore, that the greater the increase in output the greater the attendant symptoms and heart failure and the more rapid their onset. However, the exact ultimate mechanism for hypertrophy in this or any other condition is not established, although increased work, relative anoxemia and dilatation are intimately linked in the process.

SWEAT AND BODY ODOR

To the Editor:—What are the qualitative and quantitative analyses of sweat of white persons and of Negroes? It is understood that some material is excreted by the Negro in the tropics that is repelling to insect life.

M.D., California.

Answer.—As far as is known there are no important qualitative or quantitative differences in the sweat of white persons and of Negroes. There have been no reports showing that the amount of salts or lactic acid, for example, are in any way different. To be sure there are some differences in odor of the sweat of Negroes and of white persons, but this is dependent, for the most part, on the fatty acids and oils present. These odoriferous substances are secreted for the most part by the apocrine glands. Most of these glands are situated in the axilla, with fewer of them present over the pubis and around the anus and the nipples. Most mammals show examples of skin glands excreting substances that have strong odors. Most observers believe that in man these substances are secreted largely by sweat glands. A few, however, ascribe these materials to secretions of the oil glands. In any event they impart to the individual sweat, whether they originally are secreted in the sweat itself or not, a distinctive odor, peculiar to each individual. In most mammals odors from secreted materials from the skin are increased during the breeding season. The same is true for man during periods of excitement.

Some people show a much greater tendency to be attacked by various insects such as the mosquito. It is not entirely known just why there is this difference of attraction for insects by the skin of different persons. It is probable that the distinctive odors characteristic of the individual skin may have something to do with attracting or repelling insects. In a search of the literature nothing authentic on this point was found recorded. It is said that in the tropics white men are attacked more often by insects than are Negroes. It is further stated that after a certain stay there most white people become acclimated so that they become annoyed less often.

GONORRHEAL INFECTION AFTER MENOPAUSE

To the Editor:—A patient was infected with gonorrhea just past the menopause. She developed gonorrhea, endocervicitis, proctitis and infection of Skene's glands. I would appreciate your help in the treatment of this case as I am having difficulty in clearing the infection.

M.D., Michigan.

Answer.—It is assumed from the difficulty in clearing up the infection that the condition is now in the chronic state. First the patient's general resistance should be built up and sexual stimulation and intercourse absolutely avoided. The use of alcohol should be forbidden. For pain, local heat or cold may be used or mild anodynes taken.

Local treatment should be simple and not excessive. Strong antiseptics usually are of no assistance and frequently do harm by causing extension of the disease above the internal os. The external genitalia should be kept clean. If there is a profuse cervical discharge it may be removed by means of hydrogen peroxide or a Luer syringe without a needle. Local applications of 2 per cent silver nitrate or 4 per cent mercurochrome are helpful but not curative. If the cervicitis is definitely of the chronic type, the best treatment is by means of some electrical apparatus, either the nasal tip cautery, electric conization or electrocoagulation. However, it is important not to cauterize the cervix too deeply or too high in the cervical canal.

The simplest treatment of infected Skene's glands consists of injection of silver nitrate, mercurochrome or other substance into each gland through its duct. For this purpose an ordinary Luer syringe may be used but the needle must have a dull tip and not a sharp point. If this treatment is unsatisfactory or

not feasible, a better and more certain way is to use an electric current or high frequency current, which will nearly always destroy the glands and eradicate this source of infection.

Gonorrheal involvement of the rectum is more common than is believed. This condition may be treated by means of suppositories containing silver proteinate or mercurochrome, the suppositories to be inserted into the rectum after each bowel movement.

The instillation of acid capsules (No. 11 size containing 80 per cent β lactose and 20 per cent boric acid) into the vagina and acid douches (4 tablespoonfuls of vinegar [5 per cent U. S. P. acetic acid] to 2 quarts of water) may be beneficial.

Sulfanilamide may be helpful in this case. A satisfactory average dose is 2.6 Gm. (40 grains) daily, 0.65 Gm. (10 grains) after each meal and 0.65 Gm. at bedtime. Many patients have disagreeable and even dangerous symptoms from this drug, so great care must be exercised in using it. The size of the dose administered apparently has little to do with the toxic symptoms. Furthermore, rapid relief of symptoms following the use of sulfanilamide does not constitute a cure; hence slides and cultures must repeatedly be made for a long time following therapy.

OBESITY

To the *Editor*:—Kindly advise me what I can do to reduce the weight of one of my patients. The patient is a single woman aged 36, a high school teacher; since having had scarlet fever at 15 years of age she has steadily gained in weight until the now weighs 230 pounds (104 Kg.), having gained 30 pounds (13.6 Kg.) since the first of this year. She is 5 feet 6 inches tall (168 cm.) and has not had a sickness since the scarlet fever, other than a slight cold now and then. Her menstrual history is negative. The blood Wassermann reaction is negative. She has been most cooperative in the matter of diet and I have had her on 1,000 calories and even down to 800 calories for weeks at a time; still she would gain and often become faint so it would be hard for her to do her work. I have given her one-half grain (0.03 Gm.) of thyroid twice daily combined with one-fourth grain (0.016 Gm.) of solution of posterior pituitary and perhaps she would take off a few pounds for a week or so, then remain the same for a time and then gain again slowly. Her blood pressure is usually 118 systolic, 80 diastolic, and the kidneys are normal.

Howard M. Cooper, M.D., Rutherford, N. J.

ANSWER.—In order not to lose weight on an 800-1,000 calory intake, this patient would necessarily have a considerable depression of the metabolic rate. Since, from the description, there is no evidence of a decreased caloric expenditure, one is forced to the conclusion that the patient (unwittingly or deliberately) is deceiving herself and the inquirer with regard to the amount of food which she consumes. Hospitalization on a measured and supervised reduction diet is recommended. While it may be economically impracticable to hospitalize the patient for a long enough period to accomplish any considerable loss in weight, the procedure will at least give a standard for judging the efficacy of further efforts at treatment.

MERCUROCHROME

To the *Editor*:—What is the present status or value of mercurochrome in modern surgery, when used either in minor lacerated wounds or on the skin previous to operating? I have looked through the journals for a few years past and find no satisfactory answer. Recently I was told that in some health talks to the public the speaker told the people in the audience that mercurochrome was not at all satisfactory as an antiseptic in wounds or on the skin, or any place.

George D. Henderson, M.D., Holyoke, Mass.

ANSWER.—Few antiseptics have been given more extensive trial than mercurochrome. Introduced at a time when the need for better chemotherapy was felt acutely and when there were few rivals in the field, mercurochrome has been used during the last two decades for almost every sort of local and systemic infection.

The more than 350 articles on mercurochrome which have appeared in literature deal chiefly with (*a*) results of intravenous injections for various local and general infections, (*b*) toxicity of the drug when so administered, (*c*) effects of local application for infections of skin, mucous membranes and external wounds, and (*d*) preoperative disinfection of the skin and mucous surfaces.

Intravenous therapy, already in disrepute, has been rendered obsolete by the introduction of sulfanilamide and related compounds. As for the value of mercurochrome in the local treatment of intractable infections such as eczema of the ears, pruritus, chronic cervicitis and ringworm, no final answer can be given at present. But since the drug has not been generally adopted for the treatment of such conditions, one may assume that it has not proved entirely satisfactory.

The merits of mercurochrome in preoperative disinfection of the skin and the mucous membranes have been the subject of numerous investigations and some controversy. Recently introduced methods of studying cutaneous disinfection quantitatively appear to have settled the question, showing that mercurochrome, in company with certain other mercurials, is not an efficient germicide when applied to the skin, although it does produce a more or less aseptic cutaneous surface because of the formation of a filmlike structure which covers over the bacterial flora that are present without much reduction. Consequently, neither aqueous nor alcoholic solutions of mercurochrome can be considered fully satisfactory or trustworthy in preparation of the field of operation.

Large quantities of mercurochrome continue to be manufactured and sold. The largest portion probably finds its way into private homes to be used on scratches, abrasions and cuts. Here, probably, lies its greatest field of usefulness. The best preparation for these minor injuries is an aqueous solution, at least 2 per cent, but preferably 3 or even 5 per cent. It should not be applied to suppurating wounds.

WOLFF-JUNGHAN'S TEST FOR PROTEIN DIGESTION

To the *Editor*:—Please inform me of the status and efficiency of Wolff-Junghan's test for protein digestion of the stomach. Is it useful in diagnosing carcinoma?

Bruce H. Wolff, M.D., Gettysburg, Pa.

ANSWER.—This test is not in common use. It has been reported, however, as reliable for the estimation of soluble protein present in gastric contents. Its usage is based on the assumption that a gastric carcinoma secretes a peptic-splitting ferment that converts insoluble protein into soluble protein. Retained foods, saliva and bronchial secretions, as well as the presence of free hydrochloric acid, will give erroneous positive reactions. It may be used as a confirmatory test for gastric carcinoma if all these conditions are considered. Finally, the diagnosis of carcinoma is usually so evident at the time at which this test is positive that one does not have to resort to it for diagnosis.

PREMATURE CONTRACTIONS

To the *Editor*:—Can a patient have premature contractions of the heart over a period of years and then fully recover? What is the likelihood of such disappearance and the probability of recurrence?

H. T. Cuming, M.D., Pace, Miss.

ANSWER.—It is perfectly possible for a person to have premature contractions for periods ranging from a few minutes up to many years without harm and with their subsequent complete disappearance. Recurrence may or may not take place, although such recurrence is common particularly if the premature beats have been numerous and long continued. More common, however, than the complete disappearance of premature beats themselves is the disappearance of the symptoms from them, in particular the sense of palpitation. About half the persons who show premature beats on physical examination are unaware of their presence. Many individuals feel them at the beginning of their occurrence, for example the first few hours, days or weeks, and then, although the premature beats may continue, they may no longer be felt. Rare individuals are much troubled subjectively by their occurrence and often there is a cardiac neurosis involved.

CALCIUM AND TUBERCULOSIS

To the *Editor*:—Is not calcium administered in the treatment of tuberculosis for its anti-inflammatory effect, especially its check on exudation? Is it possible that calcium exercises a therapeutic anti-inflammatory effect during the first hours after administration and can this effect be prolonged by repeated taking (as practiced by many physicians)? Is literature available?

M.D., New York

ANSWER.—The anti-inflammatory effect of calcium is uncertain and depends on conditions that are not fully understood. When administered intravenously, calcium chloride decreases the elimination of saline fluids by the intestine. It has been used considerably in intestinal tuberculosis, in some cases of which it decreases the diarrhea. Calcium phosphate and carbonate are often administered by mouth in cases of diarrhea, in which it is believed to serve as an antacid and to have a protective effect. The cathartic ions have been found to be antagonistic to calcium when saline cathartics are administered. It has also been found that calcium chloride relaxes longitudinal muscle and stimulates circular muscle of the intestine.

It is believed that calcium prevents pleural effusion, which may occur with lethal doses of thiosinamine and diphtheria toxin, and also the conjunctival inflammatory edema produced by oil of mustard. However, even this effect has been denied by some

workers. Any effect which it has on peritoneal and pleural fluids is probably due to a decrease in the permeability of all the cells. In clinical serous effusions, calcium has not been found of value. This may be due to the fact that it decreases absorption more than the formation of fluid because of the decreased permeability of cells. It has also been found that calcium has a tendency to increase pulmonary and peritoneal transudation. Therefore the evidence concerning the value of calcium in the control of inflammations and exudations is not convincing. Apparently there has been no well controlled study in a sufficiently large number of cases to justify the belief that calcium is of any particular value in the treatment of the tuberculous patient who is on a normal diet, although in intestinal tuberculosis it may serve as a palliative measure.

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COMPLETE AND PARTIAL EMPTYING OF BLADDER BY CATHETERIZATION

To the Editor:—A primipara aged 27 had fifteen hours of normal labor. Her blood pressure was perfectly normal, her kidneys did not show any change, there was no shock or hemorrhage, and she was delivered by a low forceps delivery. Twenty-four hours later the bladder became distended but the patient did not complain of discomfort, and the night nurse obtained 500 cc. of normal urine by catheter. The nurse on the chart said that about half of the urine was removed. The next morning the physician commented on the chart that it was always better to remove all the urine in an obstetric patient with an acute retention. The surgical chief of the hospital objected strenuously to emptying the bladder completely and informed the nurses that it was not without danger. For my own curiosity I should like to know whether in acute retention of a normal healthy patient twenty-four hours following delivery it would be proper to withdraw the full amount to avoid a second catheterization. If you would be kind enough to decide this friendly debatable procedure, I would appreciate it.

G. C. Bates, M.D., Independence, Kan.

ANSWER.—There is no danger in the complete emptying of the bladder by means of catheterization in the puerperium. This is the usual procedure in most institutions. When the bladder has become overdistended by an acute retention of urine, its ability to empty completely should be demonstrated. Usually the patient is catheterized after voiding once or twice daily until the residual urine is less than 30 or 40 cc. The presence of a considerable residual urine in the bladder increases the hazard of urinary tract infections.

There may be some objection to the rapid emptying of the bladder of an elderly individual in whom there has been some urinary retention over a long period.

MILK FOR CHILDREN WITH FEVER

To the Editor:—Why do some physicians object to children taking milk when they have a slight elevation of temperature from a cold?

M.D., Pennsylvania.

ANSWER.—Certain physicians believe that, in acute febrile diseases or in colds with a slight elevation of temperature, the digestive functions may be impaired to some extent and that fat in the diet must be reduced and protein also held at a minimum. For this reason they may object to children taking milk during febrile diseases.

There is no scientific evidence to indicate that, during a cold with a slight elevation of temperature, such impairment of digestion occurs. Hence the rationale of limiting milk at these times is questionable.

DEAFNESS AND BLOCKING OF EUSTACHIAN TUBE

To the Editor:—A patient has recently brought to my attention an article written by Drs. T. Carroll Davis and John C. Rommell, of Philadelphia, in which they advise the use of prostigmine in cases of acute deafness associated with the blocking of the eustachian tube accompanied by ringing in the ears (known as tinnitus aurium). Would you please let me know what work has been done on this and if there is any physiologic basis for its use.

M.D., New York.

ANSWER.—Up to now there has been no confirmation of the results obtained by Davis and Rommell with prostigmine in acute deafness associated with blocking of the eustachian tube. This condition, however, is essentially a self-limited one which tends to clear itself up without any treatment and, if it does not, it usually responds readily to a few inflations. There is therefore some question whether or not the results reported were due to prostigmine or were due to the natural course of the disease.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, May 25, page 2143.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II, June 17-19. Part III, June or July, to be given in medical centers having five or more candidates desiring to take the examination. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: December 1940. *In view of the small number of applications received before March 1, there will be no examination at New York, June 10-14.* Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* October 21. Applications must be on file by September 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *General oral and pathologic examinations (Part II), (Group B)* will be conducted in Atlantic City, N. J., June 7-10. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Oral. New York, June 8-10; Cleveland, Oct. 5. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral and written.* New Orleans, January 1941. Final date for filing application is November 15. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, June 3-5. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: New York, June 10-11. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: Memphis, Tenn., Nov. 17, preceding the annual meeting of the American Academy of Pediatrics. Sec., Dr. C. Ay. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF RADIOLOGY: New York, June 7-10. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., Rochester, Minn.

Arizona January Examination

Dr. J. H. Patterson, secretary, Arizona State Board of Medical Examiners, reports the written examination held at Phoenix, Jan. 2-3, 1940. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Five candidates were examined, all of whom passed. Three physicians were licensed by reciprocity and one physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Louisiana State University Medical Center		(1938)	1
University of Minnesota Medical School		(1939, 2)	2
Temple University School of Medicine		(1938)	1
University of Texas School of Medicine		(1937)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Michigan Medical School		(1929)	Michigan
University of Nebraska College of Medicine		(1935)	Nebraska
Temple University School of Medicine		(1935)	Minnesota

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Southern California School of Medicine		(1938)	N. B. M. Ex.

Minnesota January Examination

Dr. Julian F. Du Bois, secretary, Minnesota State Board of Medical Examiners, reports the oral and written examination held at Minneapolis, Jan. 16-18, 1940. The examination covered twelve subjects and included sixty questions. An average of 75 per cent was required to pass. Fifty-five candidates were examined, all of whom passed. One physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Stanford University School of Medicine		(1936)	90.2, (1938) 89.4
Yale University School of Medicine		(1936)	87.1
Northwestern University Medical School		(1937)	88.4, 89.6, (1938) 87.5, 89.5, (1939) 82.6, 87.4
The School of Medicine of the Division of the Biological Sciences		(1939)	90.2
University of Illinois College of Medicine		(1938)	89.6, (1939) 88, 88.6
Indiana University School of Medicine		(1937)	89.1, (1938) 87.3
State University of Iowa College of Medicine		(1938)	87
University of Kansas School of Medicine		(1936)	85
Tulane University of Louisiana School of Medicine		(1938)	88.4
Johns Hopkins University School of Medicine		(1937)	85.6
Harvard Medical School		(1936)	87.3, (1937) 91.2, (1938) 87.6, 89.1
University of Michigan Medical School		(1933)	85.1, 86
University of Minnesota Medical School		(1938)	85.2,* 88.3, 89.3, (1939) 83.3,* 83.3,* 85.1,* 85.2,* 85.6,* 86.1, 87.1, 87.3,* 88.3,* 88.5,* 89.1,* 90.1,* 90.2,* 90.5,* 90.6*

University of Buffalo School of Medicine	(1934) 88.4
Duke University School of Medicine	(1938) 89
Western Reserve University School of Medicine	(1937) 93
Hahnemann Medical College and Hospital of Philadelphia	(1939) 84
University of Texas School of Medicine	(1936) 89.5, (1938) 91.2
Marquette University School of Medicine	(1939) 84.3
University of Wisconsin Medical School	(1934) 87.2
University of Manitoba Faculty of Medicine	(1937) 91.2
McGill University Faculty of Medicine	(1932) 88.4, (1938) 89.1

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Minnesota Medical School		(1939)	N. B. M. Ex.

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.

Ohio Reciprocity and Endorsement Report

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports thirty-one physicians licensed by reciprocity and one physician licensed by endorsement on January 9. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine		(1935)	Colorado
George Washington University School of Medicine		(1933)	New Jersey
Howard University College of Medicine		(1937)	Tennessee
Northwestern University Medical School		(1937)	Colorado
University of Illinois College of Medicine		(1932)	Illinois
Indiana University School of Medicine		(1937)	Indiana
State University of Iowa College of Medicine		(1931)	Iowa
University of Louisville School of Medicine		(1935)	Kentucky
Tulane University of Louisiana School of Medicine		(1933)	Alabama
University of Maryland School of Medicine and College of Physicians and Surgeons		(1935)	Maryland
Boston University School of Medicine		(1933)	Connecticut
(1936) Maine			
Tufts College Medical School		(1915)	New York
University of Michigan Medical School		(1938, 2)	Michigan
University of Minnesota Medical School		(1933)	Minnesota
St. Louis University School of Medicine		(1936), (1938, 3)	Missouri
Washington University School of Medicine		(1931), (1935), (1938)	Missouri
Creighton University School of Medicine		(1938)	Kansas
University of Nebraska College of Medicine		(1924)	Nebraska
Columbia University College of Physicians and Surgeons		(1929)	New York
Long Island College of Medicine		(1933)	New York
University of Buffalo School of Medicine		(1934)	New York
University of Pennsylvania School of Medicine		(1934)	Penna.
Medical College of Virginia		(1936)	Virginia
McGill University Faculty of Medicine		(1931)	New Jersey

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Yale University School of Medicine		(1937)	N. B. M. Ex.

Wisconsin January Examination

Dr. E. C. Murphy, secretary, Wisconsin State Board of Medical Examiners, reports the oral and written examination held at Madison, Jan. 9-11, 1940. The examination covered twenty subjects and included 100 questions. Twenty candidates were examined, all of whom passed. Thirteen physicians were licensed by reciprocity and one physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists		(1939)	87
Northwestern University Medical School		(1936) 82, (1938) 88, (1939) 91	
Rush Medical College		(1938)	90
University of Illinois College of Medicine		(1937)	88
Harvard Medical School		(1937)	89
University of Minnesota Medical School		(1939)	84
University of Oklahoma School of Medicine		(1938)	86
University of Oregon Medical School		(1938)	89
Marquette University School of Medicine		(1939) 86, (1938) 88, 88, 89, 91	87
University of Wisconsin Medical School		(1937)	88, 88,
Pennsylvania Medical School, Shanghai		(1939)	82
Osteopath *			85

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1935)	Kansas, (1937) Illinois
University of Illinois College of Medicine		(1934), (1938,2)	Illinois
Indiana University School of Medicine		(1935)	Indiana
Tulane University of Louisiana School of Medicine		(1935)	Illinois
Johns Hopkins University School of Medicine		(1934)	Maryland
University of Minnesota Medical School		(1930), (1935)	Minnesota
St. Louis University School of Medicine		(1936)	Missouri
Ohio State University School of Medicine		(1917)	Ohio
University of Cincinnati College of Medicine		(1935)	Ohio

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Københavns Universitet Lægevidenskabelige Fakultet		(1924)	U.S. P.H.S.

* Examined in surgery.

Book Notices

Dermatologic Allergy: An Introduction in the Form of a Series of Lectures. By Marion B. Sulzberger, M.D., Assistant Clinical Professor of Dermatology and Syphilology, Skin and Cancer Unit of the New York Post Graduate Medical School and Hospital of Columbia University, New York. Cloth. Price, $8.50. Pp. 540, with 52 illustrations. Springfield, Illinois, & Baltimore: Charles C. Thomas, Publisher, 1940.

The term "introduction" in the title of this book is unnecessarily modest. The reviewer knows of no work on this subject which approaches it in thoroughness, breadth of knowledge, clarity, scientific approach, and painstaking care to detail. Only one acquainted with the field of allergy and immunology, and especially its applications in dermatology, can realize what an emergence from an almost insolvable maze has been accomplished by Sulzberger in this book.

The presentation in lecture form is fortunate, as it allows the author the necessary freedom to present this difficult subject in a lucid, free manner, unhampered by the usual more formal methods. The language is clear. The highest standards for scientific discussions are met by this book. The marginal notes aid greatly in summarizing the material. The footnotes are excellent and in them the author cites his own opinions. In fact, throughout, the author never fails to state his own opinions on controversial matters, always, in addition, carefully presenting the views of others. Moreover, since he has been responsible for many of the important studies made in this field in recent years and for original contributions in every branch of this subject, the book is replete with discussions of his own experiments, observations and conclusions, and their applications to clinical medicine. The bibliographies at the end of the chapters give the important articles, which in themselves summarize all the work. He also gives first publications on the subject (recognition so frequently neglected by many authors).

Sulzberger's broad concept of allergy, together with its application in clinical medicine, is presented in detail, and its use in the diagnosis and treatment of dermatologic, infectious and medical conditions in general is clarified. All terms applicable to immunology and allergy are carefully defined. In addition the appended glossary of definitions is complete.

The first lecture is on definitions and classifications. The beginner will find this an excellent introduction to the subject of allergy. In lecture II, on some fundamental phenomena of allergy and their significance as common factors in certain diseases and reactions due either to nonliving allergens or to the agents of infectious diseases, the author discusses the fundamental principles of immunology and allergy in a lucid and instructive manner. Lecture IV, on the investigation of individual cases presumed to be based on allergy, presents all the necessary diagnostic criteria with emphasis on the necessity for intelligent criticism. The lectures on the eczematous and urticarial types of response are filled with valuable information for the research worker and practical physician. The lectures on allergy in infectious diseases, tuberculin and tuberculoderms, trichophytin and fungi, syphilis and miscellaneous infections are especially well presented and complete. Here the author applies his broad concept of allergy to conditions not generally considered "allergic" in the narrow sense of the term. Lecture XIII, on allergy to drugs and on drug eruptions, presents one of the most important branches of this field. The experienced allergist and dermatologist knows how frequently drugs (mainly simple chemical substances) are the cause of remarkably varied and manifold complaints. This chapter offers the present knowledge on this subject in such a well organized manner that it should be of value not only to the specialist but to the practicing physician as well. In the concluding chapter, on the future of allergy, the author gives free play to his views and speculations for future investigative work. He discusses organ-specific antibodies, synergism, epithelial sensitization and prophylaxis. Any one who asks Is allergy here to stay? should read this lecture for the answer. In appendix I, Sulzberger has translated Pirquet's original article on allergy, which was published in 1906. Appendix II presents the most complete list ever published of substances used for patch tests and the concentrations employed. It is one of the most important of the practical contributions of this book. Appendix III presents the criteria for

determining the industrial character of a dermatitis. It is valuable to any one dealing with industrial medicine. Appendix IV, on the management of eczematous dermatitis and on the management of urticarial dermatoses, places in the hands of the physician the best accepted dermatologic local and general procedures used in these cases.

This book demonstrates that Sulzberger is a teacher as well as a tireless investigator. In addition to its great factual content, the style in which the book is written makes it enjoyable reading.

The Inter-Relationship of Mind and Body. The Proceedings of the Association, New York, December 27th and 28th, 1939. Editorial Board: Foster Kennedy, Angus M. Frantz and Clarence C. Hare. Association for Research in Nervous and Mental Disease, Vol. XIX of a Series of Research Publications. Cloth. Price, $6. Pp. 381, with 28 illustrations. Baltimore: Williams & Wilkins Company, 1939.

One is first struck by the significant fact that this volume is only about half the size of recent volumes in this series and lastly by the even more significant fact that it could have been materially improved by a much greater reduction. This review is not concerned with the manner in which the various authors have presented their material. On the whole they have done as well as any similar group might have been expected to do. True they have attempted, unconsciously perhaps, to screen an enormous void of ignorance with a much fenestrated though thick curtain of words.

There is only one serious omission in the volume. There is nothing more than a passing reference (e. g. pp. 261, 307, 312) to the animal experimental studies of the influence of frustration and emotional stress on the activities of the remainder of the body. With the exception of this omission, the wordy volume can be accepted as setting forth fairly clearly the present state of our ignorance of the working of the mind. It is to be hoped that in years to come the volume will be frequently cited as evidence of the ignorance in this field in the first half of the twentieth century, just as the writings of Goltz and Brown-Séquard are now cited as evidence of the misunderstanding prevalent regarding cerebral localization in the latter half of the nineteenth century.

At no point is the purpose of the symposium which this volume represents made clear. From the material presented it is assumed that the aim was to present the existing knowledge concerning mental (and emotional) activity, the mechanism responsible for it and the effect of such activity on the rest of the organism. One can conclude from the book only that such knowledge is almost wholly lacking. That some of those who took part in the discussion were cognizant of this is evident (see pp. 1, 97) but one might have wished for a more frank and less verbose admission of that fact. Nor is it surprising that further progress has not been made when one surveys the unscientific manner in which information has been sought. Surely no worthwhile results are to be expected so long as we persist in the age old post hoc, ergo propter hoc type of reasoning. Yet, for example (and there are many others in this volume), there are set forth in chapters XVII and XIX, apparently for serious consideration, case histories in which a series of chronologically arranged events, selected according to the particular bias of the author, is presented as the cause of a particular neurosis and associated "somatic" disease. These discussions are completely lacking in appreciation for the need of accurate scientific controls. Yet such controls were available but were completely ignored. In case 1, pages 273-278, there were eight other siblings all of whom were born of the same "inconsiderate, domineering, self-centered, wilful" mother, who suffered from migraine, and the same "neat and clean" father, who suffered from an obsession, several of whom must have suffered from whooping cough as did the patient, must have had to take medicine administered by their mother, had discharging ears, been alive when siblings were born to their mother, and had dietary likes and dislikes, and so on ad nauseum. What of them? Did they, recipients of the same heredity and born into the same environment, also become sexually promiscuous, develop syphilis, a neurosis and asthma and die of periarteritis nodosa, cerebral hemorrhage and pneumonia? If not, why not? Surely such inadequate data cannot be accepted as establishing the primary importance of "an affection of the respiratory apparatus in early childhood," "emotional upsets" in childhood and the "great dependence on, combined with hatred of, a domineering and aggressive mother" as primary causative factors in the development of asthma.

No intelligent physician would deny the primary etiologic importance of emotional and mental factors in some forms of disease. But if those factors are to be accurately assessed we must discard such superficial observations as these for a more searching study. We would agree with the statement of the psychoanalyst (p. 306) that "the spoken communications of the patient" are "no less valid therefore as the subject of scientific study than are visual data," but we would disagree with the psychoanalyst's apparent acceptance of these "spoken communications" as valid representations of the truth.

It is time that the entire medical and psychologic professions recognized an almost complete ignorance of the anatomy and physiology of the mind. It is not sufficient that we profess "that mental and emotional operations are more closely related to the activity of the brain than to that of any other organ" (p. 81), but essential that we either prove or disprove this statement by repeated and repeatable investigations carried out with strict observation of all relevant details and under exacting scientific controls. It is essential that we recognize or disprove that mental and emotional activities are not something occult and mysterious but are really nothing more or less than the manifestations of cerebral activity; that they are as surely cerebral physiology as is the study of the relation of the brain to the activity of skeletal muscle. If we are to comprehend the complex anatomic and physiologic facts of mental activity, complete advantage must be taken of animal experimentation with full recognition of its limitations, and serious scientific effort must be directed toward the study of these activities in the animal with which we are all primarily concerned, man. The clinical investigator must "experimentally set up stresses and strains upon the organism" (p. 305) and must take far more intelligent advantage of those situations which nature provides for him than he has in the past.

This book is one of the most distressing expressions of the ignorance of all of us that has come from the medical presses in many years. It can be recommended as a reasonably thorough documentation of that ignorance.

Leistungsfähigkeit und Arbeitseinsatz des Zuckerkranken: Eine Stellungnahme zum sozialen und arbeitswirtschaftlichen Problem des Diabetes mellitus auf Grund 8-jähriger Erfahrungen im "Ersten Deutschen Diabetikerheim" Garz auf Rügen. Von Dr. H. J. Banse und Dr. R. Spiethernagel. Mit einem Geleitwort von Prof. Dr. G. Katsch. Boards. Price, 6.30 marks. Pp. 95, with 8 illustrations. Leipzig: Georg Thieme, 1940.

A most interesting monograph on work capability of persons with diabetes has appeared appropriately enough from Germany. This paper, with an introduction by Professor Katsch, represents observations on the economic aspect of diabetes mellitus founded on eight years of experience in the First German Diabetic Sanatorium at Garz, on the island of Rügen.

The First German Diabetic Sanatorium at Garz has taken for its aim the training and schooling of the diabetic patient in order to return him to a normal productive life, i. e. to preserve his ability to work in spite of diabetes. Professor Katsch emphasizes the extreme importance of this work in Germany, quoting the words of the fuehrer that German working power is Germany's gold and adding that the "present shortage of workers here in Germany makes the productive diabetic treatment so important that it takes on the nature of a national duty for doctors to embrace it."

This masterly report stresses the favorable consequences to Germany's whole social economy of rehabilitation therapy which will permit thousands of sufferers to resume gainful occupations. It emphasizes the necessity for the supervision and training afforded by sanatorium treatment as at Garz whereby the diabetic patient can be trained to take full control of his regimen. Where such sanatorium treatment is unavailable, permanent help can be provided by the use of visiting nurses. Other sanatoriums have been built in Denmark and in Hungary modeled after that in Garz; and Italy is utilizing a system of visiting nurses.

After detailing the special equipment of which the sanatorium makes use, the report discusses the question of the insulin and diet requirement of the patient as a future worker in industry. The authors prefer the slow acting insulin. This is of special significance for patients who have to work, as the injections are

less frequent. They say "Sugar is used up mostly in the muscle cells. The diet treatment of the working diabetic must of necessity aim at the creation and preservation of sufficient oxidation material, and has, therefore, to look to a sufficient intake and use of sugar." Again, "Soon it was learned [at Garz] that work is therapy in many cases of diabetes." In other words, Germany, making a virtue of a necessity, is facing the problem of the rehabilitation of diabetic patients in a challenging fashion worthy of attention. This monograph is of sufficient importance to merit translation into English for those medical men who cannot profit from it in the original language.

Estudios fonocardiográficos y hemodinámicos en embarazadas y fetos en los últimos tiempos del embarazo normal. Por Julio C. Pereira. Tesis de doctorado en medicina. Trabajo realizado en el Instituto de fisiología de la Facultad de ciencias médicas de Córdoba (Argentina). Universidad nacional de Buenos Aires, Facultad de ciencias médicas, núm. 5103. Paper. Pp. 114, with 58 illustrations. Buenos Aires: Sebastián de Amorrortu e Hijos, 1939.

This thesis for a doctor's degree is divided into three parts. The first part describes the results of phonocardiographic studies of the heart of fifty pregnant and forty-nine nonpregnant women, arriving at the conclusion that no changes in the character or frequency of heart sounds attributable to gestation can be found. The second part gives a description of records of fetal heart sounds and furnishes data as to their duration, frequency, number of vibrations which form the first and second sound, and so on. In the third part the author discusses the hemodynamics in the fetus and in other periods of life, calculated on the basis of the aforementioned studies.

As to the technic, he prefers the direct method of recording heart sounds with Wiggers-Dean capsule and optical registration to the indirect, in which the sound is transformed into oscillations of an electric current and after a suitable amplification is registered photographically. He maintains that the results of the direct method correspond better to the acoustic perception by the physician's ears because in the electrical method certain frequencies are deliberately suppressed and others unduly amplified. Although he thus enters a controversial ground, his thesis furnishes many valuable data and demonstrates the slowly but steadily growing value of phonocardiography. The book will undoubtedly meet with a favorable reception in circles interested in the recording of heart sounds.

Thomson & Miles' Manual of Surgery. By Alexander Miles, M.D., LL.D., F.R.C.S., Consulting Surgeon, Royal Infirmary, Edinburgh, and the late Sir David Wilkie. Volume I: General. Volume II: Regional. Ninth edition. Cloth. Price, $13.50 per set. Pp. 656, with 346 illustrations; 657-1371, with 644 illustrations. New York & London: Oxford University Press, 1939.

These two volumes, divided under the headings of regional and general, are concerned wholly with the clinical phases of surgery. The section on general surgery contains material on inflammation, repair, wounds and infections. Specific diseases such as syphilis, gonorrhea and tuberculosis, and diseases of systems such as vessels, nerves and bones are covered thoroughly in the first volume. The second volume contains the specific locale of the surgical disease with the anatomy, pathology and clinical features of the parts involved. The subjects are treated with a considerable detail and thoroughness throughout. It is doubtful whether in this country it is necessary to give such detailed methods of handling syphilis as are encountered in this surgical manual. The treatment of syphilis is not essentially a surgical problem, and doses of arsenicals and courses of treatment outlined in this book have been questioned in recent years.

The two volumes are treated as one unit, and each volume possesses a common index. While the contents are encyclopedic in character, clinical signs and symptoms are especially well portrayed. Preoperative and postoperative complications are discussed with surprising comprehensiveness. Recent advances in surgery are not particularly emphasized, although the last edition is dated 1931. No mention is made of the use of vitamin K in the preparation of jaundiced patients for surgery, a valuable therapeutic measure introduced over a year prior to the date of publication. Sulfapyridine is mentioned. The technical side of the surgical procedures is not dealt with in these books, and in general treatment is not always as satisfactorily portrayed as the diagnostic portions. This manual contains a great amount of well organized information and is especially valuable in the clinical phase of the practice of surgery.

A Symposium on the Blood and Blood-Forming Organs. Cloth. Price, $3.50. Pp. 264, with illustrations. Madison: University of Wisconsin Press, 1939.

This is a collection of papers delivered at the Institute for Consideration of the Blood and Blood-Forming Organs, held under the auspices of the University of Wisconsin Medical School Sept. 4-6, 1939. The subject matter, which consists of both reviews and new observations, was presented by hematologists from several of the medical schools of the United States and included a paper on "Some Historical Aspects of Hematology" by Professor Meulengracht of Copenhagen. Watson's article on the porphyrins is a summary of the present knowledge of the formation, excretion and significance of these substances. Rhoad's article on "Aplastic Anemia" describes the studies made at the Rockefeller Institute Hospital and emphasizes the point that there are several types of this disease. Articles on iron deficiency (Heath), nutritional anemias (Minot), erythroblastic anemias (Diamond), pernicious anemia (Meulengracht), leukemia (Forkner), the reticulo-endothelial system (Doan), infectious mononucleosis (Downey) and polycythemia (Reznikoff) form comprehensive reviews of the data which are considered pertinent at present on these subjects. Krumbhaar has an excellent evaluation of the present knowledge of Hodgkin's disease, well worth studying. Haden presents the theory of "critical volume" in explaining hemolysis. Furth has summarized the extensive work on leukemia carried on in his laboratory on mice. Osgood describes some of the newer data obtained by the method of "marrow culture." Eagle simplifies the subject of blood coagulation in a selective review of the literature. The book will be of considerable value and interest to those specializing in hematology, giving, in a compact form, material which was previously scattered in many journals and books.

A Textbook of X-Ray Diagnosis. By British Authors. Edited by S. Cochrane Shanks, M.D., M.R.C.P., F.F.R., Radiologist, The Prince of Wales's General Hospital, London, Peter Kerley, M.D., M.R.C.P., F.F.R., Physician to the X-Ray Department, Westminster Hospital, London, and E. W. Twining, M.R.C.S., M.R.C.P., F.F.R., Radiologist, Royal Infirmary, Manchester. In Three Volumes. Volume III. Cloth. Price, £3 3s. Pp. 800, with 710 illustrations. London: H. K. Lewis & Co., Ltd., 1939.

The first two volumes of this reference work have already been reviewed. The third encompasses the remaining subjects not included in the earlier volumes. These are divided into five parts: the central nervous system; the sinuses, mastoids and labyrinth; the bones, joints and soft tissues; the teeth and jaws; the eyes, and finally a section on cineradiography by Reynolds. In the latter is presented an interesting review of this subject by a well known authority. Despite the sixteen authoritative contributors to this volume there are relatively few contradictions. The section on the central nervous system is well done and exhibits considerable detail. The American reader may be astonished at the attention paid to arterio-encephalography in contrast to the rather brief discussion of ruptured intervertebral disk, but aside from this the material is well balanced. The section on the radiology of the paranasal sinuses and mastoids is splendid and includes a consideration of technic. The teeth and jaws are discussed by H. M. Worth succinctly and completely; this is an unusually valuable portion of the book. The major effort of the volume is devoted to the bones and joints, almost all lesions being touched on, but all too briefly. In a textbook of this size one should be able to find more than a passing mention even of the rarer conditions, but this is unfortunately too often not true. The discussion of fractures and dislocations does not cover the field to any degree. There is an excellent chapter on the pathology of bone disease, and the correlation of pathology with the x-ray appearances is consistently discussed. The arrangement of the material is somewhat confusing, leading to some repetition. The illustrations, all in positive, except those on the teeth and jaws, are uniformly good; but for a book of these pretensions they are too few. For example, none of the common anatomic variations are illustrated by actual roentgenograms; such an important disease as rickets has only two. The roentgenogram selected to represent Ewing's tumor is a rather poor choice. On the whole, however, the illustrations are well chosen and, considering their limited number, illustrate well the conditions discussed. The format and printing are excellent, but the binding seems quite inadequate

for so large a book. The three volumes form the most elaborate and complete reference book on roentgen diagnosis in the English language. Despite some shortcomings they represent an invaluable addition not only to the library of the roentgenologist but to every physician who uses the x-rays for diagnosis.

Mental Health. Forest Ray Moulton, Editor. Paul O. Komora, Associate Editor. Publication of the American Association for the Advancement of Science, No. 9. Cloth. Price, $3.50. Pp. 479, with illustrations. Lancaster, Pa.: Science Press, 1939.

With Walter L. Treadway as chairman of the publication committee, the American Association for the Advancement of Science presents the fourth symposium in the field of public health. Preceding symposiums were devoted to cancer, tuberculosis and leprosy, and syphilis. The U. S. Public Health Service, National Committee for Mental Hygiene and the Mental Hospital Survey Committee collaborated in organizing the symposium. Some forty-nine papers and formal invited discussions as well as informal discussion comprise this most comprehensive survey of the field of mental health. An introductory comment on the aims and scope of the symposium, by Thomas M. Rivers, is followed by five sections, the first of which, Orientation and Methods in Psychiatric Research, presents the diverse approaches to research in psychiatry. Sources of Mental Disease, the Economic Aspects of Mental Health, Physical and Cultural Environment in Relation to the Conservation of Mental Health, Mental Health Administration, and Professional and Technical Education in Relation to Mental Health are the succeeding general sections. The symposium concludes with a public address by Dr. C. McFie Campbell on Human Needs and Social Resources. This symposium is remarkably well organized and unusually complete. The student of problems of mental health is confronted with the unpleasant fact that always he is dealing with problems of multiple determination. He is well aware that the limitations of his own science are such as to enable him to envisage quite incompletely only an aspect of the behaving personality. The present symposium is invaluable in aiding the student in any given field of study to orient himself as to his relationship to the general problem of human conduct. Doubtless, specialists in various given fields would feel that undue emphasis is given here, too little there; but there is no question that the symposium presents on the whole a well balanced survey. The difficulties scientists have in understanding one another's language and the degree to which the scientist may be distracted from his interest in man as man is perhaps best brought out by Dr. Edward Sapir's somewhat caustic discussion of Psychiatric and Cultural Pitfalls in the Business of Getting a Living. The papers maintain a high standard of excellence. The printed symposium should be at hand for every psychiatrist and for all serious students of human conduct and personal adjustment.

A Topographic Atlas for X-Ray Therapy. By Ira I. Kaplan, B.S., M.D., Director, Radiation Therapy Department, Bellevue Hospital, New York City, and Sidney Rubenfeld, B.S., M.D., Associate Visiting Radiation Therapist, Bellevue Hospital. Cloth. Price, $4. Pp. 120, with 55 plates. Chicago: Year Book Publishers, Inc., 1939.

For successful radiation therapy, accurate representation of the diseased organ on the skin is a necessity. Carefully planned division and limitation of the fields are of the same importance as the thorough calculation of the dosage and of the amount of roentgens to be applied. The present atlas brings excellent illustrations of topographic anatomy as needed for proper settings in radiation therapy. Each drawing illustrates the organs to be treated and gives the relationship to their topographic landmarks as seen in projection on the skin. The exact placement of the cone completes the impressive illustration. Other photographs are added to show the lymphatic drainage of various organs most commonly affected in cancer which should be included in radiation therapy. In cases in which various methods of settings are used, as for instance in the treatment of carcinoma of the breast, the author illustrates various technics. The experienced authors did not fail to see that the position of the organs may vary in different individuals. Therefore they suggest that deviation from the standard anatomy be based on diagnostic x-ray examinations. Their work is valuable and helpful for safer and accurate radiation therapy.

Diabetes Mellitus and the Jewish Race. By Ernst Lyon, M.D. Paper. Pp. 32. Jerusalem: Ludwig Mayer, 1940.

This manuscript, which is more a compilation of the writings of others than the author's own work, is valuable in that it presents together the modern data on diabetes in Jews. According to Ernst Lyon, the Jewish race is not a pure race but has had many, many mixtures throughout all the years and therefore it is hardly correct to attribute the increase in diabetes in Jews to a racial origin. He emphasizes the necessity for the standardization of statistics because the Jewish population is older, owing to a smaller number of children. The possibilities of obesity and inbreeding must be considered. Furthermore, the social status and occupations are factors. The author is undoubtedly correct in stating that figures as to the incidence of diabetes in Jews must be interpreted according to their source. He says that those obtained from the private practice of specialists who are most frequently consulted by Jews with diabetes are of no (?) importance because the true number of the diabetic depends on the number and age of the Jews in the country. Lyon emphasizes the recent German statistics in which the mortality in Jews as compared with non-Jews in Germany was lower than had generally been considered, and he furthermore points out that Kahn estimated the Jews in Germany in 1936 to be 393,000, of whom 87,000 were over 60 years of age and half under 44 years of age, in contrast to the Jews in Palestine the same year, where the total was 395,000, of whom 17,000 were over 60 years and half of the total were under 20 years. Lyon also discussed the percentage of Jews among diabetic children. The reviewer knows of one group of 1,211 consecutive children in which the Jewish percentage is 6.6, whereas the percentage of Jews in a thousand cases of true diabetes investigated at the same time was 10.4.

Psychobiology and Psychiatry: A Textbook of Normal and Abnormal Human Behavior. By Wendell Muncie, M.D., Associate Professor of Psychiatry, Johns Hopkins University, Baltimore. With a foreword by Adolf Meyer, M.D., LL.D., Sc.D., Henry Phipps Professor of Psychiatry, Johns Hopkins University. Cloth. Price, $8. Pp. 739, with 69 illustrations. St. Louis: C. V. Mosby Company, 1939.

Out of his extended experience in the Henry Phipps Psychiatric Clinic, the author has developed a new work on psychobiology and psychiatry which introduces several new features. The work follows essentially the methods of teaching used at the Johns Hopkins Medical School. After a historical introduction, several chapters are devoted to the student's personality study. Thus the student begins the course by making a personal study of himself which he endeavors to make as objective as possible. Thereafter comes a consideration of abnormal behavior according to the usual classifications, with a third part of the book devoted to treatment and the fourth part to a historical bibliography. The work is especially attractive because of the excellent case reports, which graphically demonstrate to the student the nature of psychologic disturbances. Available also are diagrammatic analyses in the form of life charts of many of the patients. Modern psychiatry is in a developmental stage in which every author apparently requires special terminology for the elucidation of his classifications of mental disease. The historical bibliographic analysis, which occupies almost 200 pages of the book, seems to have been developed on the basis of a classification according to national contributions, with a special section for psychoanalytic contributions. This seems to be an extraordinarily wasteful method of presentation, the usefulness of which over a well written literary account is not apparent.

A Synopsis of Surgical Anatomy. By Alexander Lee McGregor, M.Ch., F.R.C.S., Assistant Surgeon, Johannesburg General Hospital, Johannesburg, South Africa. With a foreword by Sir Harold J. Stiles, K.B.E., F.R.C.S. Fourth edition. Cloth. Price, $6. Pp. 664, with 648 illustrations. Baltimore: William Wood & Company, 1939.

This small textbook of surgery is amazingly informative. Essentially it is divided into two parts, anatomy of the normal and anatomy of the abnormal. There are numerous simple illustrations which are schematic and readily grasped. It contains several tabular outlines of anatomic relationships and measurements. Bibliographic references are presented as footnotes. This is a genuinely refreshing book, highly commendable for ready anatomic review.

The Fundamentals of Internal Medicine. By Wallace Mason Yater, A.B., M.D., M.S., Professor of Medicine and Director of the Department of Medicine, Georgetown University School of Medicine, Washington, D. C. Second edition. Cloth. Price, $9. Pp. 1,021, with 255 illustrations. New York & London: D. Appleton-Century Company, Inc., 1940.

The first edition of this book was reviewed in THE JOURNAL, Jan. 7, 1939, page 81. The author states in a prefatory note that this revision, made fifteen months after the first edition, includes numerous alterations and additions without material increase in the size. One of the most obvious additions concerns brief discussions of sulfanilamide and sulfapyridine therapy; it is obscure why the author has used the English "sulphanilamide" and "sulphapyridine" instead of the commonly accepted American spelling. The attempt to obtain brevity with sufficient completeness encounters great difficulties. In the light of existing knowledge today a chapter on gastritis, no matter how brief, should include at least some references to the use of the flexible gastroscope. In the reviewer's opinion, the advantages of including chapters on diseases of the skin, diseases of the ear and diseases of the eye in a textbook of internal medicine are insufficient to warrant the space, which might be better applied to expanding some of the discussions on subjects more commonly included in this field.

Illustrations of Regional Anatomy. By E. B. Jamieson, M.D., Senior Demonstrator and Lecturer, Anatomy Department, University, Edinburgh. Section VI: Upper Limb. Section VII: Lower Limb. Second edition. Loose-leaf. Price, $2.50; $3.50. 42 plates; 52 plates. Baltimore: William Wood & Company, 1939.

This completes the entire edition of these pleasing anatomic illustrations. The previously issued five sections have already been reviewed in THE JOURNAL. The limbs lend themselves readily to the diagrammatic portrayal used in the drawings, and the lavish use of color helps considerably in keeping the intricate structures separate. As with the remaining sections, these additional portions can be recommended without reservation to the student of gross anatomy. The axilla is especially well portrayed. The knee joint and its ligaments could be more clearly described. Again it should be pointed out that for the small format employed too many details are occasionally delineated; this does not detract considerably from these splendid manuals.

Medicolegal & Industrial Toxicology, Criminal Investigation, Occupational Diseases. By Henry J. Ellmann, Ph.D., Director of Physicians' Laboratory Service of Toledo, Ohio. Cloth. Price, $3. Pp. 324. Philadelphia: Blakiston Company, 1940.

This book is disappointing in its content. The author has endeavored to cover too wide a field in too brief a space, with the result that much of the material is so sketchy as to have little value. Some of the inaccuracies are not free from possible harmful results. For instance (p. 222) "Carbon monoxide concentration in the air must exceed 15 parts 10,000 (1,500 p. p. m.) to produce possible serious results." This is a misleading and dangerous statement. The tentative standard of the American Standards Association for permissible range of concentrations is 100 parts per million for exposures not exceeding eight hours daily and 400 for exposures not exceeding a total of one hour daily. "An exposure of 700 to 1,000 p. p. m. will in three to four hours produce severe headache, muscular incoordination, weakness, vomiting and collapse. This reaction is adequately described as 'severe'" (quoted from the American Standards Association proposed standards, based on experiences of various studies and experiments). The chapters on industrial poisoning and occupational diseases are so abbreviated as to be of little use. The book cannot be recommended either for students or for workers in the field it aims to cover.

A Guide to Ophthalmic Operations. By J. Bruce Hamilton, M.B., Ch.M., D.O. Foreword by Sir James William Barrett, K.B.E., C.B., M.D. Cloth. Price, 10s. 6d. Pp. 201. London: H. K. Lewis & Co., Ltd., 1940.

This small volume is a radical departure from most surgical guides in that the procedures of the operation itself are entirely omitted but the preparation of the patient, instruments, drugs and dressings and the postoperative care is outlined for a great number of ocular operations. The author's preliminary training was gained in residencies at Melbourne and London, and his private practice has been conducted in Hobart, Australia; thus the outline is more readily usable to those with a similar background. Perhaps the portion of greatest interest, and this more especially to the embryo ophthalmologist, is that dealing with the method of preparation of dressings, care and storage of sutures and their preparation, and the care and sterilization of instruments, droppers, gloves and radium needles, in all of which the student has little or no teaching. The drugs, their preparation and sterilization, being taken from the British Pharmacopeia, necessarily have a limited application for the American ophthalmologist. Instruments are indicated as illustrated in British catalogues for the most part. Diet and nursing care are stressed. The volume is of great practical value for the ophthalmic surgical nurse, the student and the surgical assistant as a general outline in the preparation for the many ocular surgical procedures.

Love Problems of Adolescence. By Oliver M. Butterfield, Ph.D. Cloth. Price, $2.25. Pp. 212. New York: Emerson Books, Inc., 1939.

This book is interesting and a valuable addition to the already large volume of literature on this subject. It does not answer many of the questions which are raised, but this is doubtless a good thing, because these are questions that cannot be answered categorically and *en masse* but must be considered individually. The proper value of the book lies in the fact that it shows what these young people are thinking about and what questions they are asking one another and asking older persons who might be expected to answer them. It is a book that should be studied by parents, teachers and all young people. Physicians, ministers and social workers also should find it useful.

Surgical Diagnosis. By Stephen Power, M.S., F.R.C.S., Assistant Surgeon, London Homeopathic Hospital, London. Cloth. Price, $4.50. Pp. 228, with 66 illustrations. Baltimore: William Wood & Company, 1939.

It is a difficult task to write a book on surgical diagnosis in little more than 200 pages, yet this the author has accomplished. Twenty-two short chapters cover the entire field of surgery not exhaustively, it is true, yet sufficiently to be of much help in making a direct and differential diagnosis of almost any average surgical condition. The material is accurate and simply presented. The book is attractively printed and has a number of line drawings and illustrations which enhance the value of the text.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Accident Insurance: Erysipelas Following Extraction of Hair an Accident.—The defendant insurance company issued a policy of accident insurance to Mangol whereby it promised to pay certain benefits if he sustained injury or death provided such was not caused by disease germs or any kind of infection, "excepting only septic infection of and through a visible wound caused directly and independently of all other causes by violent and accidental means." The insured extracted by means of tweezers a hair, or hairs, from the inside of his nose with resulting bleeding. He applied iodine and inserted cotton in his nose. The next day his nose and face became swollen. Two days later he called a physician who diagnosed his condition as erysipelas. The next morning he died from the erysipelas and terminal bronchopneumonia. On the refusal of the defendant company to pay the benefits promised, the insured's wife brought suit. From a judgment in favor of the plaintiff, the defendant appealed to the United States circuit court of appeals, seventh circuit.

It was agreed, based on reasonable medical certainty, that erysipelas is a septic infection which develops because of some break in the skin or mucous membrane, such as a wound, an abrasion or a scratch, and that a pulling of a hair or hairs out of a nostril which resulted in a slight hemorrhage would produce a visible opening in the skin or mucous membrane. There was uncontroverted medical testimony that the erysipelas might or could have been caused by bacteria entering the insured's system through that opening. The terminal bronchopneumonia was the end result which followed the erysipelas owing to the lowered resistance of the patient.

In the judgment of the appellate court the evidence was sufficient to support the trial court's finding that the insured had died from a septic infection of and through a visible wound caused directly and independently of all other means by his plucking a hair, or hairs, from his nose with tweezers. The court could not agree with the defendant's contention that, because the insured intended to remove the hair or hairs, knew that by so doing he would cause a wound and knew or should have known that such wounding would probably end in serious consequences, the wound had not been caused by accidental means but had been voluntarily caused by the insured. It was the opinion of the court, therefore, that the evidence adduced justified the trial court's further finding that the insured had sustained a visible wound caused directly and independently of all other causes by violent and accidental means. Since the law in effect in the state of Illinois was controlling in this case, the court relied for its decision on a rule of law enunciated in *United States Mutual Accident Ass'n* v. *Barry*, 131 U. S. 100, 9 S. Ct. 755, 33 L. Ed. 60, which had been approved by the Supreme Court and some of the appellate courts of Illinois, that if in the act which precedes an injury something unforeseen, unexpected or unusual occurs which produces the injury then that injury has resulted through accidental means. In effect the court held that if an act is performed with the intention of accomplishing a certain result, and if in the attempt to accomplish that result another result occurs which was unintended and unexpected and not the natural and probable consequence of the intended act, then it cannot be said as a matter of law that the unintended result was not effected by "accidental means."

Accordingly, the circuit court of appeals affirmed the judgment in favor of the plaintiff.—*Mangol v. Metropolitan Life Ins. Co., 103 F. (2d) 14.*

Malpractice: Res Ipsa Loquitur; Necrosis Following Injection of Local Anesthetic.—Preparatory to performing a circumcision on the plaintiff, the defendant physician made several injections of a solution which he believed to be novocain, a local anesthetic. At the point of the first injection the plaintiff experienced a burning and stinging sensation, and a blister formed which bursted. The tissue in that area became necrotic, turned black and had to be excised. Later the plaintiff consulted another physician, who treated him for several weeks, but he was left "in such condition that he now at times suffers therefrom." He then brought suit for malpractice against the defendant physician. At the conclusion of the plaintiff's evidence, which consisted of testimony by himself and his wife, the trial court, on motion of the defendant physician, entered a judgment of nonsuit. From that judgment the plaintiff appealed to the Supreme Court of North Carolina.

The plaintiff did not allege that the defendant physician did not possess the requisite degree of learning, skill and ability necessary for the practice of his profession or that he failed to exert his best judgment in the treatment of the plaintiff's condition. Instead, he relied on the doctrine of res ipsa loquitur. He contended that the burning and stinging sensation which he experienced immediately after the first injection of the liquid and the destruction of tissue that followed was sufficient evidence to be submitted to the jury as tending to show (1) that the liquid injected was either novocain containing foreign caustic and deleterious chemicals or some liquid other than novocain that was caustic and deleterious, (2) that the liquid injected produced the condition complained of, and (3) that the defendant physician failed to diagnose properly the trouble and neglected to use proper treatment. But, said the Supreme Court, the doctrine of res ipsa loquitur is not applicable to this case. The plaintiff's testimony that the area to be operated on became "completely dead" following the injections only indicated that some type of anesthetic had been used. Was the burning and stinging sensation which followed the first injection due to some caustic chemical in the liquid or to some unusual and unexpected reaction of plaintiff's system to the medicine? Was the condition that followed the injection due to a caustic chemical in the liquid or to an infection? What was the defendant's diagnosis and what treatment should he have used? Did the second physician's diagnosis or treatment differ from that of the defendant? If the defendant incorrectly diagnosed the plaintiff's condition and failed to apply the proper remedy, was this due to an error of judgment or to negligence? The answers to these questions, said the court, were not to be found in the plaintiff's evidence but were left to mere conjecture.

Practical application of medical science, continued the court, is necessarily experimental to a large degree. Owing to the varying conditions of human systems the result of the use of any medicine cannot be predicted with any degree of certainty. What is beneficial to many sometimes proves highly injurious to others. Even the expert cannot completely fathom or understand the reactions of the human system. To say then that an unexpected, unanticipated and unfavorable result of a treatment by a physician invokes the application of the doctrine of res ipsa loquitur would be to stretch that doctrine far beyond its real purpose. The court concluded, therefore, that the plaintiff had failed to offer any evidence tending to show that he had suffered any physical injury as a proximate result of any negligence on the part of the defendant.

Accordingly, the Supreme Court affirmed the trial court's judgment of nonsuit.—*Lippard v. Johnson (N. C.), 1 S. E. (2d) 889.*

Society Proceedings

COMING MEETINGS

American Medical Association, New York, June 10-14. Dr. Olin West, 535 N. Dearborn St., Chicago, Secretary.

American Association for the Surgery of Trauma, Atlantic City, N. J., June 7-8. Dr. Ralph G. Carothers, 409 Broadway, Cincinnati, Secretary.

American Association for Thoracic Surgery, Cleveland, June 6-8. Dr. Richard H. Meade Jr., 2116 Pine St., Philadelphia, Secretary.

American Association of Genito-Urinary Surgeons, Skytop, Pa., June 20-22. Dr. Charles C. Higgins, 2020 East 93d St., Cleveland, Secretary.

American Association of Industrial Physicians and Surgeons, New York, June 6-7. Dr. Volney S. Cheney, Union Stock Yards, Chicago, Secretary.

American Broncho-Esophagological Association, New York, June 5. Dr. Paul Holinger, 1150 N. State St., Chicago, Secretary.

American College of Chest Physicians, New York, June 8-10. Dr. Robert B. Homan Jr., P. O. Box 1069, El Paso, Texas, Secretary.

American College of Radiology, New York, June 12. Mr. M. F. Cahal, 540 North Michigan Bvld., Chicago, Executive Secretary.

American Gastro-Enterological Association, Atlantic City, N. J., June 10-11. Dr. Albert F. R. Andresen, 68 Sixth Ave., Brooklyn, N. Y., Secretary.

American Gynecological Society, Quebec, Canada, June 17-19. Dr. Richard W. TeLinde, 11 East Chase St., Baltimore, Secretary.

American Heart Association, New York, June 7-8. Dr. Howard B. Sprague, 50 West 50th St., New York, Secretary.

American Human Serum Association, New York, June 10. Dr. Maurice Hardgrove, 3321 North Maryland Ave., Milwaukee, Secretary.

American Laryngological, Rhinological and Otological Society, New York, June 6-8. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.

American Medical Women's Association, New York, June 9-10. Dr. Elizabeth Parker, 1835 Eye St., Washington, D. C., Secretary.

American Neurological Association, Rye, N. Y., June 5-7. Dr. Henry A. Riley, 117 East 72d St., New York, Secretary.

American Ophthalmological Society, Hot Springs, Va., June 3-5. Dr. Eugene M. Blake, 303 Whitney Ave., New Haven, Conn., Secretary.

American Physiotherapy Association, New York, June 23-28. Mrs. Eloise T. Landis, 2065 Adelbert Rd., Cleveland, Secretary.

American Proctologic Society, Richmond, Va., June 9-11. Dr. Curtice Rosser, 710 Medical Arts Bldg., Dallas, Texas, Secretary.

American Radium Society, New York, June 10-11. Dr. William E. Costolow, 1407 South Hope St., Los Angeles, Secretary.

American Rheumatism Association, New York, June 10. Dr. Loring T. Swaim, 372 Marlborough St., Boston, Secretary.

American Society for the Study of Allergy, New York, June 10-11. Dr. J. Harvey Black, 1405 Medical Arts Bldg., Dallas, Tex., Secretary.

American Society of Clinical Pathologists, New York, June 6-10. Dr. Alfred S. Giordano, 531 N. Main St., South Bend, Ind., Secretary.

American Therapeutic Society, New York, June 7-8. Dr. Oscar B. Hunter, 1835 Eye St. N.W., Washington, D. C., Secretary.

American Urological Association, Buffalo, N. Y., June 24-27. Dr. Clyde L. Deming, 749 Howard Ave., New Haven, Conn., Secretary.

Association for Research in Ophthalmology, New York, June 11. Dr. Conrad Berens, 35 East 70th St., New York, Secretary.

Association for the Study of Internal Secretions, New York, June 10-11. Dr. E. Kost Shelton, 921 Westwood Blvd., Los Angeles, Secretary.

Maine Medical Association, Rangeley Lakes, June 23-25. Dr. F. R. Carter, 22 Arsenal St., Portland, Secretary.

Medical Library Association, Portland, Ore., June 25-27. Miss Anna C. Holt, 25 Shattuck St., Boston, Secretary.

Montana, Medical Association of, Bozeman, June 18-20. Dr. Thomas F. Walker, 206 Medical Arts Building, Great Falls, Secretary.

National Gastroenterological Association, New York, June 4-6. Dr. G. Randolph Manning, Room 119, 1819 Broadway, New York, Secretary.

National Tuberculosis Association, Cleveland, June 3-6. Dr. Charles J. Hatfield, 50 West 50th St., New York, Secretary.

New Jersey, Medical Society of, Atlantic City, June 4-6. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.

Pacific Northwest Medical Association, Spokane, Wash., July 10-13. Dr. C. W. Countryman, 407 Riverside Ave., Spokane, Wash., Secretary.

Rhode Island Medical Society, Providence, June 5-6. Dr. Guy W. Wells, 124 Waterman St., Providence, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1930 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

9:293-332 (March) 1940

Treatment of Coronary Artery Sclerosis. M. M. Weiss, Louisville, Ky.—p. 293.
Abnormal Uterine Bleeding. L. F. Turlington, Birmingham.—p. 296.
The Hard of Hearing Patient: Recent Advances in Treatment. E. R. Nodine, Andalusia.—p. 299.
Carcinoma of Cervix. J. D. Peake, Mobile.—p. 300.
Gynecology and Endocrines in the Day of J. Marion Sims and Now. G. F. Douglas, Birmingham.—p. 303.

American Heart Journal, St. Louis

19:257-384 (March) 1940

Characteristics of Normal Heart Sounds Recorded by Direct Methods. N. H. Boyer, R. W. Eckstein and C. J. Wiggers, Cleveland.—p. 257.
Mode of Development of Collateral Venous Circulation in Extremities. J. R. Veal, Washington, D. C.—p. 275.
Circulatory Effects Produced in Patient with Pneumopericardium by Artificially Varying Intrapericardial Pressure. J. D. Adcock, R. H. Lyons and J. B. Barnwell, Ann Arbor, Mich.—p. 283.
Compression of Subclavian Vein by First Rib and Clavicle, with Special Reference to Prominence of Chest Veins as Sign of Collateral Circulation. J. J. Sampson, J. B. de C. M. Saunders and C. S. Capp, San Francisco.—p. 292.
Response of Normal Dogs and Dogs with Experimental Hypertension to Standard Cold Stimulus. Caroline Bedell Thomas and T. A. Warthin, Baltimore.—p. 316.
Medial Degeneration, Cystic Variety, in Unruptured Aortas. A. Rottino, New York.—p. 330.
Saphenous Valves in Varicose Veins. J. E. Edwards and E. A. Edwards, Boston.—p. 338.
*Pathogenesis of Bacterial Endocarditis. C. S. Keefer, Boston.—p. 352.

Pathogenesis of Bacterial Endocarditis.—The symptoms and signs of a chronic infection, the local signs of valvular heart disease, embolic phenomena and bacteremia suffice, according to Keefer, for the diagnosis of bacterial endocarditis. The diagnosis is often difficult when there is no bacteremia and when the disease is active but no signs of valvular disease are present. Bacterial endocarditis without bacteremia must be distinguished from acute rheumatic endocarditis and from valvular disease with infection elsewhere. The absence of bacteremia, lack of progressive nephritis and of signs of embolic phenomena, the presence of pericarditis and cardiac arrhythmias point to rheumatic fever rather than endocarditis. A previously damaged heart valve of rheumatic fever, the presence of platelet thrombi on the heart valves, transient bacteremia and the presence of antibodies are all important in determining the development of bacterial endocarditis. Bacterial endocarditis is most commonly encountered following rheumatic fever or congenital heart disease. The most vulnerable persons are those in good health, comparatively free from symptoms suggesting heart failure and who have not had repeated attacks of acute rheumatic fever. The disease is less frequent in patients with syphilitic aortic insufficiency than in patients with aortic valvular disease caused by rheumatic fever. It is rare in patients who have had attacks of heart failure or who have chronic auricular fibrillation. The common congenital defects which predispose to infection are congenitally bicuspid aortic valves and patency of the ductus arteriosus, although the infection occurs in connection with other defects. Deformed valves make a favorable place for bacteria to focalize and survive. Platelet thrombi on the valves serve as a favorable environment for the localization of infection. Nonbacterial thrombotic endocarditis occurs in a variety of conditions, and these platelet thrombi may become infected and produce bacterial endocarditis. Thrombotic and rheumatic endocarditis predispose to bacterial endocarditis because both afford a suitable area for bacteria to localize and gain a foothold, and, as such thrombi are relatively free of leukocytes, organisms focalizing here are able to survive. Since bacterial endocarditis always follows a bacteremia and its symptoms first assert themselves following extraction of teeth, tonsillectomy, respiratory infections or local infections with suppuration, it is imperative to discover the port of entry of the organism. Bacterial endocarditis may develop without a demonstrable preceding bacteremia, for nonhemolytic streptococci are normal inhabitants of the mouth and throat from a period shortly after birth until death. Experimental bacterial endocarditis in dogs, horses, rabbits and chickens suggests that damage of the valve, bacteremia and the presence of immune bodies all play a part in the pathogenesis of the disease. Platelet thrombi form on the heart valves shortly after they are ruptured and such thrombi serve as a suitable medium for the localization of bacteria. The situation is analogous to the conditions which favor the development of bacterial endocarditis in patients with previously damaged valves. Bacterial endocarditis has been produced experimentally by repeated intravenous injections of bacteria. An appreciation of the fact that the body possesses an immune mechanism capable of clearing the blood of organisms emphasizes the futility of trying to treat this disease with vaccines, immune serum or blood transfusions. The difficulty of destroying the organisms lies in the fact that they are capable of surviving in vegetations. Their survival is made possible by the building up of a wall of fibrin in the vegetation. The wall of fibrin is a suitable medium for the growth of the organisms and it prevents the invasion of leukocytes. The possibilities for sterilizing the vegetations would appear to be (1) the actual destruction of vegetations by chemical agents or (2) the prevention of deposits of fibrin. If this can be accomplished, the patient should recover. Patients who recover from infection of the heart valves may die as a result of the damage (subacute and chronic glomerular nephritis, progressive anemia, embolism and splenomegaly) that has been inflicted during the active, infective stage of the disease. There exists postmortem evidence of healed cases of bacterial endocarditis without any of the foregoing sequelae. It has been suggested that these are cases of bacterial endocarditis in which recovery occurred.

American J. Digestive Diseases, Huntington, Ind.

7:85-140 (March) 1940

Effect of Various Antacids on Hydrogen Ion Concentration of Gastric Contents. J. B. Kirsner and W. L. Palmer, Chicago.—p. 85.
Studies in Cellular Exudates of Bowel Discharges: II. Differential Diagnosis of Amebiasis: Types of Cells Found in Bowel Discharges of Patients with Bowel Complaints. Z. Bercovitz, New York.—p. 93.
*Hypoglycemic Reactions from Protamine Zinc Insulin. W. L. Lowrie Jr. and D. P. Foster, Detroit.—p. 101.
Bactericidal Action of Metallic Ions in Broth Containing Dehydrated Apple. I. A. Manville and N. P. Sullivan, Portland, Ore.—p. 106.
Relationship of Diet to Self-Regulatory Defense Mechanism: III. Organic Acids and Pectin. I. A. Manville and N. P. Sullivan, Portland, Ore.—p. 111.
Aneurysm of Abdominal Aorta. M. Feldman, Baltimore.—p. 114.
Emptying Time of Normal Human Stomach as Influenced by Acid and Alkali: Review of Literature. E. J. Van Liere and C. K. Sleeth, Morgantown, W. Va.—p. 118.
Urinary Amylase: Its Estimation and Significance. D. L. Dozzi, Philadelphia.—p. 123.
II. Biliary Pigment Curve During Secretin Test: Its Diagnostic Significance in Nonfunctioning Gallbladder. J. S. Diamond, S. A. Siegel and S. Myerson, New York.—p. 133.
Influence of Weight of Duodenal Tube Tip on Its Entrance Time. M. Lake, New York.—p. 136.
Method for Continuous Recording of Gastric Hydrogen Ion Concentration in Situ: II. Experimental Details. J. Plexner, New York, and M. Kniazuk, Rahway, N. J.—p. 138.

Hypoglycemic Reactions from Protamine Zinc Insulin.—Lowrie and Foster observed eighty-nine persons who were given both protamine zinc and regular insulin. None were included in the study who had taken protamine zinc insulin for less than six months. Forty-three of the eighty-nine patients had no reactions from either type of insulin. Forty-two patients were subject to hypoglycemic reactions while taking regular insulin. Thirty-two patients had reactions after a change to protamine zinc insulin. Four patients who had been free from reactions on regular insulin complained of hypoglycemic symptoms with protamine zinc insulin. Of the twenty-eight patients having reactions from both forms of insulin, twenty-one observed less frequent reactions with pro-

tamine zinc insulin. Two patients had more frequent reactions with protamine zinc insulin. Decreased severity of reactions with protamine zinc insulin was noticed by nineteen patients. Four patients stated that hypoglycemic symptoms were more severe with protamine zinc insulin than with regular insulin. Insulin reactions were much more frequent in the under nourished. Of the thirty-two patients who were above normal weight, eight experienced reactions from regular insulin and only four from protamine zinc insulin. Reactions were encountered more frequently when higher doses of insulin were necessary for adequate control of the disease. Hyperglycemia in most patients could be controlled with a single daily injection of protamine zinc insulin and reactions in these patients were less frequent. Twenty-nine patients complained of nervousness, a sensation of trembling in the epigastric region and weakness. Twenty-three patients complained of hunger, twenty-one of sweating and blurring of vision, nineteen of headache and faintness, thirteen of somnolence and dizziness, eight of nausea, seven of paresthesias, six of disorientation and five of loss of consciousness. One patient has had two attacks of transitory hemiplegia. In changing from regular to protamine zinc insulin the following plan seemed to provide an interim free from hyperglycemia: On the first day four fifths of the total daily regular insulin dose is administered as protamine zinc insulin. If three doses of regular insulin are being used, the first two doses are given as usual but only half of the third dose. On the second day the same dose of protamine zinc insulin is given and the full first dose of regular insulin but the noon dose is halved and the last dose omitted. On the third day the same amount of protamine zinc insulin is administered; the breakfast dose of regular insulin is halved and the lunch and supper doses are omitted. On the fourth day protamine zinc insulin alone is administered. Readjustment of this dose may be necessary on subsequent days. Every new patient should be instructed not to disregard mild symptoms but to consider them as possible hypoglycemic manifestations. By proper education and strict supervision at the beginning of treatment much can be accomplished toward the prevention, early recognition and proper treatment of protamine zinc insulin reactions.

American Journal of Hygiene, Baltimore

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Tuberculosis Among Massachusetts School Children: Report on the Massachusetts Ten Year Program: Part I. Incidence of Infection. E. P. Hutchinson and A. S. Pope, Boston.—p. 62.

SECTION B

*Quantitative Bacterial Analysis of Air of Operating and Delivery Rooms and Related Areas of General Hospital. K. MacDonald, Iowa City.—p. 74.

*Air-Borne Beta Hemolytic Streptococci: Scarlet Fever Epidemic. K. MacDonald, Iowa City.—p. 88.

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SECTION D

Serum Antibody in Dogs Actively Immunized Against the Hookworm, Ancylostoma Caninum. G. F. Otto, Baltimore.—p. 23.

Dietary Deficiencies and Iron Salts in Hookworm Infections. G. F. Otto and J. W. Landsberg, Baltimore.—p. 37.

Tuberculosis in Medical Students and Young Physicians.—Hetherington and Israel secured information as to the incidence and course of tuberculosis of 98 per cent of the 400 physicians who had been examined as members of the classes graduating from the Medical School of the University of Pennsylvania in 1930, 1931 and 1932. Tuberculous infiltration of the lungs, in most instances asymptomatic, was found in about 18 per cent. Clinical tuberculosis requiring sanatorium care or collapse therapy developed within six to eight years after graduation in fifteen physicians, ten of whom had positive sputum. Two of the fifteen had had clinical tuberculosis in medical school before routine examination was instituted. Three physicians had been negative on x-ray examination at graduation, while asymptomatic tuberculous lesions were discovered during the medical course in the remaining ten. Symptoms developed in the first two years after graduation in eight of the fifteen men. There was no recurrence of symptoms after graduation in three other men whose medical course had been interrupted by clinical tuberculosis requiring sanatorium care. The asymptomatic infiltrations found in 18 per cent of the 400 medical students consisted in more than a third of small, strandlike infiltrations. These lesions appeared to be chiefly of epidemiologic interest, but flocculent asymptomatic infiltrations, particularly when appearing below the clavicle, frequently resulted in clinical illness after graduation. Serious disease developed less often after graduation in students with lesions similar in character and extent in whom the diagnosis was manifest tuberculosis. This was probably due to the more radical restriction of activities and increase in rest advised. Absence of symptoms in students with extensive lesions, and the trivial character of symptoms described by students with minimal tuberculous lesions, indicated that definite ill health was rarely caused by tuberculous infiltrations until lesions became moderately advanced. Physicians who reported the development of clinical tuberculosis after graduation had moderately advanced or far advanced disease in every instance. Impairment of health sufficient to arouse suspicion of tuberculosis was thus apparently not noticed even by physicians while lesions were minimal. Asymptomatic tuberculous infiltrations progressed to clinical and fatal disease less often in medical students than in other groups more typical of the general population. This is attributed principally to the willingness of medical students and physicians to be treated when symptoms are slight or absent.

Bacteria in Air of Operating and Delivery Rooms.—MacDonald states that miscellaneous bacteria, including hemolytic staphylococci and alpha and beta hemolytic streptococci, were isolated from the air of operating and delivery rooms. The average number of organisms recovered from 10 cubic feet of air throughout the actual operating day was as follows: total number of bacteria 230.494, hemolytic staphylococci 3.49, alpha hemolytic streptococci 0.556, beta hemolytic streptococci 0.02. The Petri plate method of determining the bacterial content of the air under the conditions of the study gave results comparable to those obtained by the Wells air centrifuge. The extent of bacterial contamination in operating and delivery room air is influenced by the number of individuals and the amount of activity. The settling rate of droplet nuclei in these locations is such that there is no accumulation from day to day. The possibility of infection in clean operative wounds due to settling of droplet nuclei which contain hemolytic staphylococci and hemolytic streptococci must be recognized.

Air-Borne Beta Hemolytic Streptococci.—During the course of a scarlet fever epidemic in a maternity division of a hospital due to type III (Griffith) streptococcus, MacDonald studied thirty-two 10 cubic feet samples of air in an attempt to ascertain the extent of droplet nuclei transmission of organisms responsible for the epidemic. He found that, although hemolytic streptococci may be recovered from the air as droplet nuclei, the dilution is such that air-borne transmission of scarlet fever appears slight.

American Journal of Ophthalmology, St. Louis

23:245-370 (March) 1940

Experimental and Clinical Studies in Hydrocephalus, with Especial Reference to Occurrence of Papilledema. J. Q. Griffith Jr., W. E. Fry and A. McGuinness, Philadelphia.—p. 245.

Lens Lesions in Contusions: Medicolegal Study. M. Davidson, New York.—p. 252.

*Some Observations on Use of Sulfanilamide in Trachoma and Associated Ocular Conditions. W. D. Spining, Ganado, Ariz.—p. 271.

Pathogenesis of Retinitis Pigmentosa (Sclerosis Pigmentosa Chorioretinalis). Lizzie Levy-Wolff, Tel-Aviv, Palestine.—p. 273.

Hemangioma of Orbit: Report of Six Cases with Clinical and Anatomic Findings. A. E. Meisenbach Jr., St. Louis.—p. 286.

Is Myopia a Deficiency Disease? H. Miller, Kansas City, Mo.—p. 296.

Trachoma in Japan, with Special Reference to Public Health. H. Shiga, Tokyo, Japan.—p. 306.

Sulfanilamide for Trachoma.—Spining administered sulfanilamide to fifteen adult patients with acute bulbar conjunctivitis with or without phlyctenules or corneal ulcers superimposed on a trachoma of long standing. The drug was

administered in daily doses of from 4 to 6 Gm. As soon as improvement was apparent, the dosage was decreased. All but one patient showed marked improvement of the acute symptoms in from three to four days, and in the majority photophobia, lacrimation, hyperemia and edema of the lids subsided entirely within three weeks. Corneal ulcers and phlyctenules cleared more slowly. Granulations of the palpebral conjunctivas and pannus, although improved, were always present at the time of discharge. Seventeen school children between the ages of 8 and 14 years, all having chronic trachoma diagnosed by an eye specialist, received doses of sulfanilamide suggested by Loe. In all of these cases trachoma had been present for a year or more. Clinically the cases were fairly uniform. Tearing, photophobia and bulbar conjunctivitis were definitely improved or had disappeared after three or four days of treatment. The conjunctivas of the lids became less congested and the granulations appeared paler and smaller. At the end of the treatment nine patients receiving sulfanilamide for from twenty-one to twenty-four days still presented granulations and velvet patches on the upper palpebral conjunctiva, and the pannus was still visible with the slit lamp. Only one of the seventeen cases could readily have been diagnosed as active trachoma at the end of treatment. In the author's opinion the results were no more striking than would be expected in similar cases hospitalized for the same period and given any of the usual forms of treatment. A check up of twelve of the children by an eye specialist three months after therapy was discontinued showed some improvement as compared to the condition of the eyes prior to the treatment. Considerable improvement was observed as compared with cases treated by other methods. However, there was no evidence of a complete cure or arrest of the trachomatous process.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

43:305-468 (March) 1940

*Correlation of Postmortem Chest Teleroentgenograms with Autopsy Findings, with Special Reference to Pulmonary Embolism and Infarction. A. O. Hampton and B. Castleman, Boston.—p. 305.
Cystic Bronchiectasis: Clinical and Roentgenologic Study. D. Reisner and I. G. Tcherthoff, New York.—p. 327.
Ventriculographic Localization of Intracranial Tumors: III. Tumors of Cerebellum and Fourth Ventricle. V. C. Johnson and C. F. List, Ann Arbor, Mich.—p. 346.
Incidence of Hyperostosis Frontalis Interna in Female Patients Admitted to a Mental Hospital. W. W. Eldridge and G. A. Holm, Washington, D. C.—p. 356.
Persistent Fibrin Body: Problem in Diagnosis. A. Rest, Spivak, Colo.—p. 360.
Carcinoma as Complication of Achalasia of Cardia. K. Kornblum and L. C. Fisher, Philadelphia.—p. 364.
Spontaneous Pneumoperitoneum Without Demonstrable Visceral Perforation. C. L. Hinkel, New York.—p. 377.
Carcinoma of Jejunum: Case Report. J. H. Harris and J. E. Green, Carlisle, Pa.—p. 383.
Saccular Abdominal Aortic Aneurysm: Analysis of Forty-Eight Cases. M. J. Hubeny and S. Pollack, Chicago.—p. 385.
Normal Variation in Gastrointestinal Response of Healthy Children. Icie G. Macy, L. Reynolds, Helen J. Souders and Mary Bates Olson, Detroit.—p. 394.
*League of Nations Work on a Uniform Presentation of Results of Radiation Therapy in Uterine Cancer. J. Heyman, Stockholm, Sweden.—p. 404.
Treatment of Infected Hemangiomas. E. A. Pohle, Madison, Wis.—p. 408.
*Arthritis and Para-Arthritis Treated with Roentgen Rays: Report of 161 Cases. T. B. Weinberg, New York.—p. 416.
Roentgen Therapy of Bilateral Parotid Fistula. R. J. Reeves, Durham, N. C.—p. 425.
Peripheral Nerve Destruction: Unusual Sequela of Radium Therapy. I. S. Holtzman and W. E. Howes, Brooklyn.—p. 426.
Use of Cathode Ray Oscillograph for Measuring Roentgen Tube Voltage. C. Weyl, S. R. Warren Jr. and D. B. O'Neill, Philadelphia.—p. 428.

Postmortem Chest Teleroentgenograms with Necropsy.—Hampton and Castleman made postero-anterior and lateral roentgenograms of the chest from the vertically suspended body after death at a distance of 7 feet. Postmortem roentgenograms corresponded to those taken ante mortem during quiet breathing or expiration. The differences in the antemortem and postmortem roentgenograms consisted of the degree of aeration of the lung and the alteration in the size and shape of the cardiovascular shadows. At necropsy the lungs were removed with the trachea, great care being taken not to tear the visceral pleura. Kaiserling solution No. 1 (a formaldehyde fixative) was instilled by gravity through the trachea until both lungs were approximately the size they were during life. The trachea was clamped and the specimen submerged in a large crock containing the same fixative and allowed to remain for about a week. At the end of this period the lungs were sectioned by the pathologist in the presence of the roentgenologist. An attempt was made to find anatomic explanation for the shadows seen on the postmortem roentgenograms, and the roentgenologist attempted to find in the roentgenogram the lesions present in the specimen. The authors have studied 400 cases by this method. In the present study they were concerned with the recognition of pulmonary embolism and infarction. Use was made of a larger number of cases drawn from the 3,500 necropsies performed during the ten year period prior to the combined study. In this series pulmonary embolism and infarction were noted in 9 per cent of the cases, and in 3.5 per cent it was considered a major cause of death. In the combined study group of 400 cases, 14 per cent showed either pulmonary embolism or infarction, an apparent increase of more than 50 per cent. The authors emphasize the higher proportion among medical rather than surgical patients. Infarctions of the lung were found to be in contact with pleural surfaces, with the long axis of the infarct parallel to the longest pleural surface involved. The cardiac margin of the infarct is convex or "hump" shaped. Special attention is called to healing and healed infarcts. These produce linear shadows on the roentgenograms and are more easily recognized by the described method. The term "incomplete infarction" is suggested for the syndrome characterized by pleural pain or blood spitting or both, associated with a rapidly appearing and disappearing infarct-like area of consolidation in the lung without alveolar wall destruction. The authors conclude that there is often insufficient clinical evidence to allow a diagnosis of pulmonary infarction. There may be no pleural pain, blood spitting or an obvious source of embolism. In the presence of any one of these symptoms associated with x-ray evidence consistent with an infarct, the diagnosis may be made. In view of the fact that one third of the cases of pulmonary infarction is represented by patients who have not been operated on and who have no demonstrable cardiac lesion, it is important to consider pulmonary infarction in the differential diagnosis of pulmonary disease in ambulatory patients. An accurate diagnosis of pulmonary infarction is important in order that proper treatment may be instituted and fatal embolus prevented.

Radiation Therapy in Uterine Cancer.—According to Heyman, the Health Committee of the League of Nations decided in 1935 to issue annual reports on the uniform presentation of the results of radiation therapy in uterine cancer. The primary object of the proposed annual statistical reports was to provide a convenient reference work. In order to facilitate uniform presentation of data, the committee has adopted certain rules to be observed. "Notes for guidance of collaborators" specify the clinical types of cases to be reported, namely cancer of the uterine cervix, including cancer of the stump of the cervix. The following types are to be excluded: (1) cancer of the corpus uteri and vagina, (2) recurrences after radical operation, and (3) patients primarily submitted to combined operative and radiation treatment. The "notes for guidance" further specify that only cases microscopically diagnosed as cancer are reportable. Chorio-epithelioma, sarcoma, malignant mixed tumors and precancerous conditions are to be excluded. It is further stipulated that (1) the report is to relate to the total number of patients whose radiologic treatment was begun during the year to which the statement refers, as well as all patients examined with a view to treatment but not actually treated; (2) the statement is not to be completed until a period of observation of at least five years from the beginning of the treatment has expired in all cases included. The clinical material and the therapeutic results are to be presented in tabular form.

Arthritis and Para-Arthritis Treated with Roentgen Rays.—Weinberg has treated, since 1931, 160 cases of arthritis and other painful joint conditions with roentgen radiation. In the series were included arthritis, mainly of the hypertrophic variety, subdeltoid and subacromial bursitis, and cervical, dorsal and lumbar spondylitis. The predominant and often the only subjective symptom was pain of variable intensity and duration. Associated symptoms were limitation of motion, tenderness, swelling, in rare instances elevated temperature and malaise.

A large percentage of the patients had positive x-ray signs. The presence or absence of x-ray evidence of disease, however, was not considered a criterion in instituting the treatment. Radiation was given directly over the involved area. The dose was from 100 to 150 roentgens two or three times weekly and varied from three to twelve treatments. The factors were 180 kilovolts, 4 milliamperes, 0.5 mm. of copper plus 1 mm. of aluminum and 50 cm. focal skin distance; the fields varied from 10 by 10 cm. to 15 by 20 cm., depending on the size and the position of the involved area. The shorter the duration of the symptoms the sooner the condition was alleviated. The more chronic cases required a longer period to bring about satisfactory results. The large majority of the patients were completely relieved of pain and remained symptom free. Several patients had one or more recurrences and were relieved by a repeated course of treatment. A few did not respond to this therapy. A number of cases showed complete absorption of the calcified foci with disappearance of symptoms. The cases reported were referred by practicing physicians after they had, as a rule, exhausted other orthodox and standard types of treatment. The majority of the patients were followed up as long as five or six years. The author feels that the results obtained justify continuation of this form of therapy in para-arthritis associated with pain.

American Review of Tuberculosis, New York

41:283-402 (March) 1940

Pulmonary Tuberculosis in Cattle: Location and Type of Lesions in Naturally Acquired Tuberculosis. E. M. Medlar, Mount McGregor, N. Y.—p. 283.
Treatment of Pulmonary Tuberculosis in Adolescents. H. D. Chadwick and Helen W. Evarts, Waltham, Mass.—p. 307.
Extrapleural Pneumothorax: Twenty-One Patients Treated from November 1937 to March 1938. H. F. Newton, F. Dawson and J. E. Dunphy, Boston.—p. 319.
Paraffin Pack in Treatment of Pulmonary Tuberculosis. F. Ottaviano, Rochester, N. Y.—p. 334.
*Oxygen as Cause of Reactions Following Pneumothorax Refills. H. E. Pugsley, Gravenhurst, Ont.—p. 339.
Total Agranulocytosis Following Gold Therapy: Report of Case with Recovery and Review of Literature. G. S. Mirick, San Francisco.—p. 344.
Actinomycosis of Lung and Pleura. E. C. Cutler and R. E. Gross, Boston.—p. 358.
Reorganization of Antituberculosis Campaign in Sweden. O. L. Glogauer, Höör, Sweden.—p. 368.
Unrecognized Tuberculosis in General Hospitals. R. E. Plunkett and E. X. Mikol, Albany, N. Y.—p. 381.

Oxygen Reactions Following Pneumothorax Refills.—According to Pugsley, about 3 per cent of the tuberculous patients who have artificial pneumothorax at his institution are subject to a febrile reaction after each refill. The reaction (fever, malaise, chest pain, deep breathing, headache, general aches, nausea and/or vomiting) sets in about twelve hours after the refill and lasts for from twenty-four to forty-eight hours. When helium refills were given to same patients little or no reaction took place. Pneumothorax can be safely induced and maintained with helium, which appears to cause no irritation of the pleura. Refills slightly larger in amount than air are required to maintain the pneumothorax. Six patients subject to reactions after air refills had either slight or no reactions after helium refills. To determine the element in air which causes reactions the author gave nitrogen refills to each of the six patients, a mixture of helium and oxygen, and in three oxygen alone. No reaction followed the nitrogen refills, a slight or moderately severe reaction followed the mixture of helium and oxygen and a moderately severe reaction followed the oxygen refills. If a patient has a pneumothorax complicated by chronic tuberculous pleuritis, a refill containing oxygen may cause an acute febrile reaction of short duration which probably represents a flare-up of the tuberculous pleuritis. This observation supports the theory that oxygen supply is a vital factor in the activity of tuberculous foci and that the rich oxygen supply of the pulmonary parenchyma is a factor in determining the relatively low resistance of pulmonary tissue to the invasion of tubercle bacilli. In a case of tuberculous effusion an acute febrile reaction may follow aspiration of the fluid and air replacement. In such cases aspiration and nitrogen replacement should be tried. As nitrogen is less rapidly absorbed than helium, it is more suitable for refills.

Archives of Dermatology and Syphilology, Chicago

41:639-816 (April) 1940

Metastases of Scalp Simulating Turban Tumors. F. Ronchese, Providence, R. I.—p. 639.
New Modification of Patch Test (Chamber Method). I. Rokstad, Oslo, Norway.—p. 649.
Androgenic Substance and Sweat. T. Cornbleet and Broda Barnes, Chicago.—p. 654.
Role of Vitamin C in Various Cutaneous Diseases. W. F. Lever and J. H. Talbott, Boston.—p. 657.
Treatment of Psoriasis with Concentrated Viosterol Under Auspices of Cincinnati Society of Dermatology and Syphilology. G. E. Clarke, Cincinnati.—p. 664.
Rate of Ulceration of Epitheliomas of Skin and Lip. W. D. Wilson, Savannah, Ga.—p. 667.
Multiple Symmetrical Gangrene Occurring During Prolonged Administration of Aminopyrine: Report of Case. J. A. Buchanan, Brooklyn.—p. 678.
Relapsing Febrile Nonsuppurative Panniculitis: Report of Two Cases. I. L. Tilden, H. C. Gotshalk and E. V. Avakian, Honolulu, Territory of Hawaii.—p. 681.
Nitritoid Reaction to Tryparsamide: Report of Case. H. A. Levy, Chicago.—p. 690.
Cutaneous Absorption: I. Direct Technic for Demonstrating Percutaneous Absorption of Antigens. A. Walzer, Brooklyn.—p. 692.
Pruritus Ani and Its Relationship to Seborrheic Eczema and Dermatophytosis. P. D. Foster and M. R. Hill, Los Angeles.—p. 699.
Fixed Eruption from Magnesium Hydroxide: Polysensitivity. E. W. Abramowitz, New York, and J. J. Russo, Albany, N. Y.—p. 707.
Pyoderma Gangraenosum Treated with Sulfanilamide: Report of Case. A. L. Weiner, Cincinnati.—p. 711.
Qualitative Measurements of Low Voltage Shock-Proof X-Ray Tubes. M. C. Reinhard, Buffalo.—p. 718.
Reticulum Cell Sarcoma: Report of Case with Pronounced Cutaneous Manifestations. C. T. Bingham and S. S. Quarrier, Hartford, Conn.—p. 722.
Cutaneous Hypersensitivity to Triethanolamine: Report of Two Cases. G. H. Curtis and E. W. Netherton, Cleveland.—p. 729.
Generalized Trichophyton Purpureum Infection Simulating Dermatitis Herpetiformis: Report of Case. J. A. Talmach and J. Schweig, New York.—p. 732.

Archives of Neurology and Psychiatry, Chicago

43:615-858 (April) 1940

Temporary Arrest of Circulation to Central Nervous System: I. Physiologic Effects. L. M. Weinberger, Mary H. Gibbon and J. H. Gibbon Jr., Philadelphia.—p. 615.
*Tuberculoma of Brain. H. F. Buchstein, Minneapolis, and A. W. Adson, Rochester, Minn.—p. 635.
Studies in Dystrophia Myotonica: III. Experimental Studies in Myotonia. A. Ravin, Denver.—p. 649.
Metrazol Convulsions: Changes in Oxygen, Carbon Dioxide and Sugar Contents of Arterial and of Internal Jugular Venous Blood. J. Loman, M. Rinkel and A. Myerson, Boston.—p. 682.
Investigation of Electrolytic Rectification in Nerves: Invalidity of Pflüger's Law of Contraction. L. J. Pollock and I. Finkelman, Chicago.—p. 693.
Action Potentials of Muscles in Rigidity and Tremor. P. F. A. Hoefer and T. Putnam, New York.—p. 704.
Influence of Insulin and of Stimulation of Sympathetic Nervous System on Blood: Study of Sugar Content, Carbon Dioxide Tension and pH. S. Domm and E. Gellhorn, Chicago.—p. 726.
Paraplegia in Flexion. L. E. Daniels, Denver.—p. 736.
Amyotrophic Lateral Sclerosis: Anatomic and Pathologic Considerations. G. B. Hassin, Chicago.—p. 765.
Meningioma Showing Sarcomatous Degeneration. F. K. Bradford, Houston, Texas, and A. J. Miller, Louisville, Ky.—p. 778.
Effect of Insulin Shock on Heart and Blood Pressure in Treatment of Schizophrenia. M. J. Farrell, Waltham, Mass., and E. Vassaf, Istanbul, Turkey.—p. 784.
Monochorea and Somatotopic Localization. C. Davison and S. P. Goodhart, New York.—p. 792.
Physiologic Regulation of Cerebral Circulation. H. S. Forbes, Boston.—p. 804.

Tuberculoma of Brain.—Buchstein and Adson report twelve microscopically verified cases of tuberculoma of the brain observed at the Mayo Clinic. Operation was performed in six. Tuberculosis of the brain is always secondary to a tuberculous focus elsewhere. The tubercle bacilli may reach the brain and its coverings by the growth of a contiguous lesion, they may pass from tuberculous lesions in the nasal and pharyngeal cavities to the cranial meninges by way of the perineural lymphatic channels accompanying some of the cranial nerves or, as is generally agreed, the great majority of tuberculous lesions of the brain arise by blood borne metastasis from foci which may be confined to one organ (usually the lungs) or may be generalized. Tuberculomas are divided into asymptomatic and those associated with clinical evidence of intracranial disease. Most instances of asymptomatic tuberculoma escape detection. Tuberculomas giving rise to associated symptoms of intracranial disease are divided into two groups. In the larger group the symptoms are exclusively or predominantly those of tuberculous

meningitis and the tuberculomas are more often small and multiple. There were four cases of this type in the authors' series. In two, in addition to the basilar meningitis, about thirty-five small tuberculomas of approximately equal size and similar structure lying in all parts of the brain were found. They had evidently resulted from a shower of tubercle bacilli in the blood stream. In the other two cases one and two small chronic tuberculomas of the cerebellum were observed. Tubercle bacilli were found in them only after prolonged search. In the other group (eight cases) the symptoms are attributable to the tuberculoma itself. They may be localizing in character or may be indicative of increased intracranial pressure. Tuberculomas producing symptoms of cerebral tumor occur at all ages and in persons who have but a single extracranial tuberculous focus, usually in the lungs or the associated lymph nodes. Tuberculomas associated with the clinical picture of meningitis occur predominantly in the early years of life and in association with generalized tuberculosis. The pathologic characteristics of tuberculomas are not different from those of tuberculosis elsewhere. Tuberculomas may be positively identified by finding acid-fast bacilli in them. The clinical syndromes which they produce are not significantly different from those produced by other varieties of cerebral tumor. A correct etiologic diagnosis is made only when the patient has active tuberculosis in another organ or in the presence of a positive tuberculin reaction in a child. A history of tuberculous disease in the past is suggestive but not conclusive. Laboratory studies do not aid in the differential diagnosis. The treatment of tuberculomas of the brain must be directed against tuberculosis as a disease and against the local lesion if possible. Attempts at removal of a cerebellar tuberculoma almost always end in disaster, owing to the development of tuberculous meningitis. Decompressive operations may afford relief until healing takes place. Fibrocaseous tuberculomas of the cerebrum and arachnoid tuberculomas, particularly those in the rolandic region, form the best subjects for surgical extirpation. Their symptoms permit of an early diagnosis and they are accessible to removal in one piece. Good results will follow in a gratifying percentage of cases.

Canadian Medical Association Journal, Montreal

42:209-310 (March) 1940

Postoperative Results in Lesions Involving Spinal Cord and Cauda Equina. K. G. McKenzie, Toronto.—p. 209.
New Method of Repairing Anterior Crucial Ligament of Knee. F. J. Tees, Montreal.—p. 214.
Misplaced Gastric Mucosa as Cause of Massive Rectal Hemorrhage. G. A. Fleet, Montreal.—p. 216.
Expectorant Action of Resyl and Other Guaiacols. W. F. Connell, G. M. Johnston and E. M. Boyd, Kingston, Ont.—p. 220.
Toxic Goiter: Present Status of Treatment. W. O. Thompson, Chicago.—p. 224.
Treatment of Painful Feet. G. W. Armstrong, Ottawa, Ont.—p. 227.
*Actinomycosis. H. S. Morton, Montreal.—p. 231.
Eye Signs in Intracranial Disease. R. J. P. McCulloch, Toronto.—p. 236.
Management of Labor in Elderly Primiparas. J. W. Duncan and W. E. Gibson, Montreal.—p. 240.
Diagnosis and Treatment of Endometriosis. G. Hooper, Ottawa, Ont.—p. 243.
Hydatid Disease. J. C. Sutton, Montreal.—p. 247.
*Extrahepatic Tumors of Biliary Tract. C. K. P. Henry, Montreal.—p. 251.
Selection of Anesthesia for Upper Abdominal Operations. C. C. Stewart, Montreal.—p. 254.
Child Care During War. A. Brown, Toronto.—p. 257.
Problems in Conservative Treatment of Sinusitis. T. E. Briant, Welland, Ont.—p. 260.
Use of Trypars amide in Optic Atrophies of Syphilis. S. E. C. Turvey, Vancouver, B. C.—p. 264.

Actinomycosis.—Morton points out that because actinomycosis is rarely diagnosed many cases are missed and an understanding of the disease lags far behind that of other chronic granulomas. Its bacteriology is complicated by the large number of organisms which have been described, only a few of them being pathogenic to man and none having any marked pathogenicity for laboratory animals. There is no generally accepted classification. Until a universally accepted bacteriologic classification is available clinicians will have to be content with the presence or absence of the ray fungus and call the disease "actinomycosis." The appropriate drug or vaccine will have to be determined in each individual case. The many forms of treatment testify to the inefficiency of any one type of therapy. Of the drugs, potassium iodide in moderate to large doses, i. e. from 150 to 300 grains (9.7 to 19.5 Gm.) daily, is still the best therapy. Sulfanilamide used in two cases showed definite improvement in one but there was no observable effect in the other. This corresponds with other reports, and the conflicting accounts may perhaps be explained by peculiarities of the strain as well as by the concomitant infection present; e. g., in the first of the author's three cases, with a mixed infection with staphylococci, the drug had little or no effect, whereas in the third case, with an unusual strain of anaerobic Actinomyces, the improvement was appreciable. Surgical treatment is imperative in nearly all cases. When complete excision is possible it should be carried out; otherwise incision and drainage of all abscesses is indicated, combined with such other treatment as may seem best suited to the case. The prognosis varies with the site affected. In all suggestive cases early and diligent search for the ray fungus should be undertaken and a culture made from the material of the wall of the abscess when the pus is sterile.

Extrahepatic Biliary Tumors.—Henry emphasizes the frequent lack of diagnosis of jaundiced patients admitted to the hospital, and the frequency of obstructive jaundice due to carcinoma, especially that of the head of the pancreas. His studies include surgical specimens, biopsies and necropsies of the Central Division of the Montreal General Hospital for a period of ten years. There were 820 gallbladders removed and of these fifteen were removed for tumors of the extrahepatic biliary system. There were twenty-five women and thirty-five men with such diagnoses. The clinical records show fourteen patients in whom carcinoma of the gallbladder was diagnosed. There were thirty-eight patients with a diagnosis of carcinoma of the head of the pancreas with obstructive jaundice and three of carcinoma of the cystic, hepatic or common duct diagnosed at operation. The author believes that there occur each year five or six cases of obstructive jaundice due to carcinoma in the extrahepatic biliary system in the Central Division of the Montreal General Hospital. About 103 operations are performed annually on the biliary tract, making 6 per cent of these tumors extrahepatic. He concludes that the onset of painless jaundice in a person more than 50 years of age, with few exceptions, means carcinoma of the head of the pancreas. Pruritus frequently precedes jaundice in such cases. Repeated attacks of colic or of transient jaundice in a patient free from these for some years is suggestive of malignant change and calls for an exploratory operation. Operation on the gallbladder should be undertaken only by a surgeon who is prepared to deal with a tumor as well as with a stone. For obstructive jaundice due to a tumor in the lower ductal system which is not operable, cholecystogastrostomy appears to offer the patient the longest period of well being and freedom from cholemia. A hard mass at the head of the pancreas in a jaundiced patient may be a stone, even when thought otherwise by the operator. A fibrosing pancreatitis may simulate tumor and produce jaundice. Diabetes occurred but seldom in the sixty cases, while a mild hyperglycemia was a fairly common observation.

Canadian Public Health Journal, Toronto

31:99-162 (March) 1940

Treatment of Paretic Neurosyphilis by Malaria and Trypars amide. C. M. Crawford, Kingston, Ont.—p. 99.
Child Care in Wartime. A. Brown, Toronto.—p. 106.
Industrial Medical Service in Peace and War. F. M. R. Bulmer, Toronto.—p. 111.
Prevalence of Venereal Disease Infections in Vancouver. E. N. Brown and D. H. Williams, Vancouver, B. C.—p. 120.
Epidemiologic Investigations in Quebec. A. R. Foley, Quebec, Quebec.—p. 124.
Foster-Home Placement of Problem Children. E. P. Lewis, Toronto.—p. 127.

Florida Medical Association Journal, Jacksonville

26:427-474 (March) 1940

Myelogenous Leukemia. W. G. Dorn, Daytona Beach.—p. 439.
Pediatrics Fifty Years Ago and Today. W. W. McKibben, Miami.—p. 442.
Fractures of Pelvis: Report of Seven Cases and Their Treatment. J. I. Turberville, Century.—p. 447.
Treatment of Meningococcic Meningitis. D. F. H. Murphey, St. Petersburg.—p. 451.
Zinc Peroxide in Infected Wounds. C. L. Perry, Miami.—p. 453.
Sporotrichosis: Case Report. W. M. Davis, St. Petersburg.—p. 456.

Illinois Medical Journal, Chicago

77:193-288 (March) 1940. Partial Index

Perforations of Gastrointestinal Tract. Gatewood, Chicago.—p. 213.
Expansion of Medical Idea in Veterans' Organization. O. Brooks, Chicago.—p. 224.
Are Regulations for Admission to Veterans' Hospitals and Facilities Adhered To? R. C. Bourland, Rockford.—p. 230.
Bilateral Cortical Necrosis of Kidneys. J. A. Tuta and A. Vander-Kloot, Chicago.—p. 238.
Studies in Coronary Disease: I. Relation of Coronary Sclerosis to Heart Weight and to Right and Left Ventricular Hypertrophy. A. S. Shobet, S. J. Taub and H. Kupersmith, Chicago.—p. 240.
Fatal Tricuspid Endocarditis Due to Type I Pneumococcus Treated with Sulfapyridine. B. G. Fishkin and I. Pilot, Chicago.—p. 244.
Chemotherapeutic and Spontaneous Recoveries from Psychoses: Comparison as to Quality. J. Weinberg, H. H. Goldstein and J. V. Edlin, Chicago.—p. 266.
Acute Gingivostomatitis in Children. J. D. McKinney, Champaign.—p. 269.
Some Clinical Studies in Sterility in Men. L. M. Beilin, Chicago.—p. 272.
Psychosis Due to Exogenous Toxins—Marihuana. Marjorie Nesbitt, Chicago.—p. 278.
Modern Concepts of Obesity. S. C. Freed, Chicago.—p. 282.

Indiana State Medical Assn. Journal, Indianapolis

33:117-170 (March) 1940

The National Health Bill. J. E. Murray, Butte, Mont.—p. 117.
Hospital Insurance and Medical Indemnity. P. Irving, New York.—p. 123.
Postgraduate Medical Education in Oklahoma. H. H. Turner, Oklahoma City.—p. 126.
The General Practitioner in Medical Practice. M. Fishbein, Chicago.—p. 128.
Diagnosis and Treatment of Peripheral Vascular Disease. E. V. Hahn and P. Merrell, Indianapolis.—p. 130.
Coronary Occlusion with Myocardial Infarction: Three Cases with Serial Electrocardiograms. R. E. Lyons Jr., Bloomington.—p. 134.

Journal of Allergy, St. Louis

11:225-332 (March) 1940

Serologic Changes in Hay Fever Cases Treated Over a Period of Years. W. B. Sherman, A. Stull and R. A. Cooke, New York.—p. 225.
Studies in Absorption of Undigested Protein in Human Beings: VIII. Absorption from Rectum and Comparative Study of Absorption Following Oral, Duodenal and Rectal Administrations. I. Gray and M. Walzer, Brooklyn.—p. 245.
Relationships Between Foods as Shown by Skin Test in 1,000 Children: Some Characteristics of Skin Test. G. Piness, H. Miller, H. D. Carnahan, A. R. Altose and R. C. Hawes, Los Angeles—p. 251.
Fallibility of Autopassive Transfer Test (Cowie). S. Marton, New York.—p. 266.
*Chronic Hyperplastic Sinusitis in Allergic Patients: Bacteriologic Study of 200 Operative Cases. R. C. Grove, New York, and J. B. Farrior, Ann Arbor, Mich.—p. 271.
Periarteritis Nodosa and Asthma: Case Report. A. Trasoff and M. Scarf, Philadelphia.—p. 277.

Hyperplastic Sinusitis in Allergic Patients.—Grove and Farrior report a bacteriologic study of 200 operative cases of chronic hyperplastic sinusitis. All the patients had some allergic manifestation. Four fifths had asthma. The other allergies were hay fever, vasomotor rhinitis, urticaria, angioneurotic edema, eczema, vernal catarrh and migraine. One or more positive cutaneous tests of a moderate or marked degree were exhibited by 100 of the patients. They were not regarded as clinically significant, since in many the sensitization did not adequately explain the allergy, and the elimination did not effect any improvement in the asthma of many patients. The maxillary membranes were obtained by the Caldwell-Luc operation performed during a quiescent state. Bacteriologic examination was made of 365 washings from the maxillary and sphenoidal sinuses, 130 polyps and membranes removed from the ethmoidal and sphenoidal sinuses and 108 membranes removed from the maxillary sinuses. Staphylococcus was found in 60 per cent of the sinus washings. It was also the most frequent organism in the sinus membranes. Hemolytic streptococci were found more frequently in the antral membranes (25 per cent) than in the sinus washings (11.7 per cent) or in the ethmoidal and sphenoidal membranes (8.5 per cent). Pneumococcus and Streptococcus viridans were present much more frequently in the washings and in ethmoidal and sphenoidal membranes than in the antral membranes. The frequent finding of the hemolytic streptococcus in the antral membranes indicates its importance as an agent of infection. A clear return flow from antral irrigation may be sterile, but a heavy growth of one or more organisms may be cultured from membranes removed at operation. Sixty-four cases with a positive culture of the washings showed only two membranes with no growth, although special stains showed the presence of bacteria in the tissue. Of the 108 cultures of the antral membranes forty-seven showed a growth of an organism which had not been recovered in the cultures of the previous washings. This does not mean that certain organisms found in the washings were not present also in some of the antral membranes. The cultures of the membranes of the two antrums occasionally showed different organisms and often different from those in the ethmoidal membranes. Twenty per cent of the ethmoidal and sphenoidal membrane cultures and 12 per cent of the sinus washing cultures were negative. Cultures of the ethmoidal and sphenoidal membranes showed staphylococci more frequently than the cultures of the washings by 14 per cent. Staphylococci were present in pure culture in 150 of the 365 washings, in fifty-nine of the 130 ethmoidal and sphenoidal membranes and in nineteen of the 108 antral membranes. Hemolytic streptococci were present in pure culture in twenty-three of the 365 washings and in twenty-four of the 238 sinus membranes. More than one organism was cultured from ninety-eight of the 365 washings and from seventy-one of the 108 antral membranes. The fact that only 4 per cent of the antral membranes showed no growth indicates the importance of the sinus membrane as a focus of infection. The negative cultures are explained by the fact that earlier in their work mucous polyps were opened and cultured from within, whereas now they make a culture of the polyp sac and the underlying membranes which are the source of the infection. Of the antral membranes 95 per cent and of the ethmoidal and sphenoidal membranes 80 per cent showed bacteriologic evidence of infection. Streptococci of all types cultured from the 238 sinus membranes were found in 44 per cent. This is far below the 94.5 per cent that Kistner reported for his group of 400 sinus membrane cultures. It is possible that the membranes found in nonpurulent sinusitis, as Kistner describes it, may be more frequently infected with streptococci than the hyperplastic membranes found in their allergic cases. The figures for the occurrence of streptococci in the sinus washings compare favorably with those of many other investigators.

Journal of Immunology, Baltimore

38:159-250 (March) 1940

Quantitative Aspects of Phagocytosis as Influenced by Number of Bacteria and Leukocytes. J. H. Hanks, Washington, D. C.—p. 159.
Studies on Measles: I. Use of Chorio-Allantois of Developing Chicken Embryo. G. Rake and M. P. Shaffer, New Brunswick, N. J.—p. 177.
Contact Reactions in Atopy: I. Contact Reactions to Silkworm in Atopic Subjects. M. Albert and M. Walzer, Brooklyn.—p. 201.
Antigenic Property of Insulin. P. Wasserman, R. H. Broh-Kahn and I. A. Mirsky, Cincinnati.—p. 213.
Electrophoretic Study of Antipneumococcus Horse Serums. D. H. Moore, J. van der Scheer and R. W. G. Wyckoff, Pearl River, N. Y.—p. 221.
Immunologic Cross Reactions of Type B Friedländer Bacillus in Type 2 Antipneumococcus Horse and Rabbit Serum. P. B. Beeson and W. F. Goebel, New York.—p. 231.
Cutaneous Reactivity of Guinea Pigs to Gum Arabic. R. M. Seideman, Boston.—p. 237.

Journal of Lab. and Clinical Medicine, St. Louis

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Action of Ouabain on Splanchnic Circulation in Dog. J. E. Nadler, A. R. Berger and J. Ballinger, New York.—p. 557.
Oral Pollen Therapy. S. C. Schwartz, El Paso, Texas.—p. 566.
Traumatic Epithelial Cysts. T. G. Cogswell and R. H. Goodale, Worcester, Mass.—p. 576.
Studies in Alimentary Canal of Man: X. Roentgenographic Study of Normal Pylorus and Duodenal Cap. J. M. Painter, T. W. Todd and Wilhelmine Kuenzel, Cleveland.—p. 581.
Management of Diabetes as Controlled by Tests of Acetone in Expired Air. A. P. Briggs, Augusta, Ga.—p. 603.
Physiologic Activity of Cigaret Smoke Solutions as Related to Their Nicotine Content. H. B. Haag, Richmond, Va.—p. 610.
Estimation of Serum Phosphatase Activity with Disodium Phenyl Phosphate. D. M. Greenberg, S. P. Lucia and H. G. Weitzman, San Francisco.—p. 634.
Comparative Study of Blood and Spinal Fluid by Kahn, Kline and Laughlen Tests. L. E. Taschner, Medical Lake, Wash.—p. 642.
Triple Sugar-Ferrous Sulfate Medium for Use in Identification of Enteric Organisms. S. E. Sulkin and J. C. Willett, St. Louis.—p. 649.
Bedside Test for Sulfapyridine. H. D. Ratish and J. G. M. Bullowa, New York.—p. 654.

Journal of Pediatrics, St. Louis

16:275-408 (March) 1940

Variations in Concentration of Ascorbic Acid in Plasma of the Newborn Infant. R. L. Mindlin, Boston.—p. 275.
Vitamin A Status of Children as Determined by Dark Adaptation. J. M. Lewis and C. Haig, New York.—p. 285.
Neurologic Sequelae of Paranatal Asphyxia. F. Schreiber, Detroit.—p. 297.
*Heart Murmurs in Newborn Infants. R. A. Lyon, Louise W. Rauh and J. W. Stirling, Cincinnati.—p. 310.
Ventricular Dilatation in Spina Bifida. B. Shapiro and V. G. Tosti, Jamaica, N. Y.—p. 318.
*Prophylaxis and Treatment of Poliomyelitis with Neoprontosil. W. M. Rhett, Charleston, S. C.—p. 326.
Spontaneous Erections in Early Childhood. J. H. Conn and L. Kanner, Baltimore.—p. 337.
Treatment of Acute Alcoholism with Insulin: Report of Case. H. M. Taylor and A. R. Cross, Durham, N. C.—p. 341.
Treatment of Tetany of Newborn Infant with Dihydrotachysterol. A. Bloxsom, Houston, Texas.—p. 344.
Pneumococcic Meningitis: Report of Sulfapyridine Reaction Involving Mucous Membranes. Mary L. Moore and R. P. Forbes, Denver.—p. 347.
Sarcoma of Vulva in a Seven Month Old Infant. H. Hauptman and F. J. Taussig, St. Louis.—p. 350.
Adapter for Urine Specimen Tubes. M. Shinn and H. L. Wunderly, Pittsburgh.—p. 356.
Psychologic Care of the Preschool Child. Ruth Morris Bakwin and H. Bakwin, New York.—p. 357.

Heart Murmurs in Newborn Infants.—Lyon and his associates encountered 147 newborn infants, among a total of 7,673, with heart murmurs. They were able to follow the course of ninety-two in later life. Heart murmurs were somewhat more frequent in the Negro infants than in the white infants. The seventy-six white infants constituted 1.6 per cent of a total number of white full term babies, while the seventy-one Negro infants with murmurs constituted 2.4 per cent of the total number of Negro infants. There were seventy boys (1.8 per cent) and seventy-seven girls (2 per cent). These infants were classified according to the month of their birth, and although there was a slight increase in the incidence in the fall and winter months the differences were not great. Further analysis would be necessary to demonstrate that the different seasons with their variations in diet and vitamin intake had any influence on the incidence of murmurs. The factor of birth weight and its influence on murmurs was not borne out, although they were somewhat more frequent in infants weighing from 9 to 10 pounds (about 4,000 to 4,500 Gm.) than in other weight groups. The incidence of murmurs in the infants of the entire group of white mothers was 1.9 per cent, and of mothers with positive serologic reactions only 1.3 per cent. The respective figures for infants of Negro mothers were 3.1 and 2.6 per cent. Syphilis apparently had no part in the causation of cardiac murmurs in newborn infants. Almost all the murmurs heard in this series were systolic. In only two instances was there a diastolic murmur associated with a systolic murmur. The murmurs were blowing in quality in about half of the group, and in the other half they were rough or musical. The majority were audible over the entire precordium and were usually loudest at the apex or in the region of the third costal interspace a little to the left of the sternum. In forty-one of eighty-four infants observed for a week a murmur was heard during the first twenty-four hours of life but had disappeared by the third to sixth day; in twenty the murmurs were heard on both the first and sixth days of life and in the remaining twenty-three the murmur was not heard on the first day but only on the fifth or sixth day. Of the ninety-two infants followed after dismissal, four died between four days and nine months after birth. Of the remaining eighty-eight, thirty-one were seen only once, thirty-six from two to ten times and twenty-one on more than ten occasions. Practically all these infants were examined about six months after dismissal and forty-five were followed until they were more than 1 year of age. The murmurs had persisted in fourteen instances; in three a patency of the interventricular septum was suspected but in the others no definite diagnosis could be made. Mild cyanosis was observed in two infants. The hearts of the remaining seventy-four infants seemed normal except for inconstant systolic murmur in two instances and extrasystoles in one other. No distinctive signs occurred during the first week of life to indicate which murmurs would persist for longer periods. The quality of the murmurs and their location during the first week were practically the same in the infants with permanent murmurs as in those with temporary murmurs.

Prophylaxis and Treatment of Poliomyelitis with Azosulfamide.—During an epidemic of poliomyelitis Rhett gave azosulfamide as a prophylactic to 440 acutely ill children. The daily dose was 0.065 Gm. per pound of body weight. In one of these children a transient paralysis developed on the fifth day of illness. The mother of this child did not keep up the maintenance dose of the drug. Symptoms subsided when full dosage was resumed, and paralysis was recovered from during the three weeks of quarantine. Meningeal symptoms developed on the fifth day of illness in two other children under similar circumstances; that is, noncontinuance of the maintenance dose. These symptoms subsided without paralysis when the full dosage of the drug was once more administered. In fourteen cases of poliomyelitis the drug was given in the preparalytic stage. Paralysis developed in only one of these. Eight children with a clinical diagnosis of meningeal involvement of poliomyelitis recovered under azosulfamide medication without paralysis. These cases are not reported as positive as they were not confirmed by spinal fluid examination. Eleven patients with paralytic involvement were treated with azosulfamide. Toxic symptoms subsided in from twenty-four to forty-eight hours, and there was no progression in paralytic involvement after an adequate dosage of the drug was reached and maintained for from twenty-four to forty-eight hours. There were no deaths in the acute phase of the disease. There were two patients presenting acute fulminating onset of the disease with involvement of all extremities and respiratory musculature. The respirator was necessary. One of these patients died two months later while convalescing and recovering some respiratory function. Death was caused apparently by an attack of asthma, from which she had suffered for several years.

Laryngoscope, St. Louis

50:89-200 (Feb.) 1940

Diseases of Larynx: Material Abstracted During the Year 1939. H. B. Orton, Newark, N. J.—p. 89.
New Concepts of Functions of Tongue. M. A. Goldstein, St. Louis.—p. 164.
Practical Apparatus for Point Irrigation. E. R. Hargett, Springfield, Ohio.—p. 189.
Experimental Evidence of Gonadotropic Hormone in Nasal and Sinus Mucous Membranes. A. A. Eggston, New York.—p. 191.
Lateral Sinus Thrombosis: Unusual Course. L. Hubert, New York.—p. 195.
Acute Mastoiditis Masked by Sulfanilamide. S. Rosen, New York.—p. 198.

50:201-276 (March) 1940

Allergy in Otorhinolaryngology and Ophthalmology: Review of Recent Current Literature. F. K. Hansel, St. Louis.—p. 201.
Studies on Anatomy and Physiology of Tongue. Jacqueline Keaster, St. Louis.—p. 222.
Inherent Accuracy of Series of Repeated Clinical Audiograms. E. G. Witting and W. Hughson, Abington, Pa.—p. 259.
Calculi in Submaxillary Gland and Wharton's Duct. G. B. Gilmore, New York.—p. 270.

Minnesota Medicine, St. Paul

23:149-220 (March) 1940

Cesarean Section: Brief Historical and Technical Review. L. W. Barry, St. Paul.—p. 149.
*Further Results in Treatment of Acute Poliomyelitis with Antistreptococcus Serum (1928-1937). E. C. Rosenow, Rochester.—p. 161.
Recent Progress in Otology. H. Newhart, Minneapolis.—p. 165.
Management of Postoperative Intestinal Obstruction Complicated by Hemorrhage on the Basis of Prothrombin Deficiency. C. F. Dixon and R. O. Gregg, Rochester.—p. 169.
Allergy in General Practice. H. J. Roemer, Winona.—p. 173.

Antistreptococcus Serum in Acute Poliomyelitis.—Rosenow compares the results obtained in the treatment of 221 patients with acute poliomyelitis receiving antistreptococcus serum since 1928 under his supervision or under the supervision of physicians to whom he sent the serum and the effects of the disease among 116 similar patients living under comparable conditions who did not receive the serum. The initial symptoms in the group in which serum was administered were somewhat more severe than the initial symptoms in the control group. The results are contrasted on the basis of mortality and residual paralysis. Of the patients who received the serum ten died, whereas twenty-three of the control patients died. Of the 211 patients who received serum and who survived 161 recovered without having residual paralysis, twenty-nine had slight paralysis, fourteen had moderate residual paralysis and only seven

(3.3 per cent) had severe residual paralysis. Of the ninety-three control patients who survived, only thirty-four did not have residual paralysis, ten had slight paralysis, seventeen had moderate paralysis and thirty-two (34.4 per cent) severe paralysis. The number of injections and the total amount of serum administered were recorded for 188 patients; a total of 508 injections was administered, representing 7,670 cc., or an average of about 15 cc. at each injection, and 40 cc. for each patient. The amount of serum administered per patient ranged from 10 to 200 cc. Only one person had an immediate severe reaction to the serum, three a moderate reaction, three a slight reaction and 146 no immediate reaction. Six patients had severe late reactions, fifteen moderate reactions, twelve slight reactions and 120 no late reaction. Of the ten patients who died in the serum group, all had marked paralysis before the serum was administered. Of the seven patients to whom serum was administered and who recovered with severe residual paralysis, five had severe paralysis before treatment with serum was instituted and two had moderate paralysis. In only one instance was the first injection made as early as the second day after the onset of symptoms. Of the twenty-nine patients who had slight residual paralysis after treatment, twenty-one had a severe degree of paralysis and two did not have any paralysis at the time of the first injection of serum. Of the 161 patients who eventually recovered without residual paralysis 106 did not have paralysis, eight had slight paralysis, six had moderate paralysis and forty-one had severe paralysis at the time of the first injection of serum. The degree of residual paralysis was in direct proportion to the duration of the disease before the administration of the serum. Thus, among those patients who recovered with severe residual paralysis the average duration of the disease was 4.3 days, among those with moderate residual paralysis it was 4.7 days, among those with slight residual paralysis it was 3.5 days and among those with no residual paralysis it was 2.3 days. The much lower mortality (4.5 per cent) and incidence of severe residual paralysis (3.3 per cent) of the patients given serum in comparison with the mortality (19.8 per cent) and incidence (34.4 per cent) of severe residual paralysis of the controls seem directly attributable to the action of the antistreptococcus serum. Restless, nervous children often fell asleep soon after receiving the first injection of serum. Headache and pain in the involved extremity or part often were lessened or relieved. The temperature, especially among patients in the preparalytic stages, rapidly fell to normal, usually after an initial transient elevation. Progressive paralysis often was seemingly arrested. Restoration of muscle function was more rapid among patients who received serum. These favorable results, obtained since 1928, are in strict accord with those previously reported.

New England Journal of Medicine, Boston

223:471-516 (March 21) 1940

Medical Education. A. L. Lowell, Boston.—p. 470.
Alternating Tremor (Paralysis Agitans) and Athetosis: Recent Advances in Diagnosis and Treatment. T. J. Putnam, New York.—p. 473.
The Quality of Medicine. N. B. Van Etten, New York.—p. 476
Carcinoma of Uterine Cervix: Results of Treatment Through 1933, Showing the Value of Supplementary X-Radiation. G. Van S. Smith and F. A. Pemberton, Brookline, Mass.—p. 481.
Esophagobronchial Fistula: Result of Foreign Body: Report of Case. J. A. Murtagh and M. D. Tyson, Hanover, N. H.—p. 494.
Dermatology. P. C. Baird Jr., Boston.—p. 496.

223:517-562 (March 28) 1940

The Warrens of New England and Their Friends. H. Stalker, Grosse Pointe, Mich.—p. 517.
Present Day Medical Economics: Informal Discussion. R. Fitz, Boston.—p. 530.
Diagnosis and Treatment of Sigmoidal Polyps. R. B. Cattell and N. W. Swinton, Boston.—p. 535.
*Treatment of Rheumatoid Arthritis with Sulfur: Critical Evaluation. N. R. Abrams and W. Bauer, Boston.—p. 541.
Surgery of Sympathetic Nervous System, with Particular Reference to Vascular Disease. R. H. Smithwick, Boston.—p. 546.

Treatment of Rheumatoid Arthritis with Sulfur.—According to Abrams and Bauer the evidence that the sulfur content of articular cartilage is reduced in patients with rheumatoid arthritis is meager and not well established. They point out the difficulties encountered in evaluating the results of therapy in rheumatoid arthritis and stress the precautions and the necessity of a rigid control in accurate estimation. In their series of patients (twelve ambulatory and two hospitalized) all but two had been observed for periods varying from one to five years before sulfur therapy was instituted. The two exceptions had been on an established basic regimen for months prior to hospitalization without obtaining any appreciable effect. The same basic regimen of a high vitamin, high caloric diet, added vitamins in the form of cod liver oil and yeast, daily physical therapy and constant rations of acetylsalicylic acid, allowed during the pretreatment period, was continued during the sulfur therapy and post-treatment periods. Two of these patients received two series of injections. Colloidal sulfur was given intravenously to twelve patients (fourteen courses) and intramuscularly to two. Ten patients received a total of from 310 to 370 mg. of colloidal sulfur over a period of from six to eight weeks. In order to establish that larger doses (1,000 mg. or more) were no more efficacious than the previously mentioned smaller ones, three patients were given 1,080, 1,200 and 2,980 mg. respectively. Twenty mg. was administered as an initial dose, except for two of the patients. Subsequent injections of 30 mg. each were given to all patients except those receiving the larger doses. In the latter 50 mg. was given as a second dose and 100 mg. subsequently. The results indicate that colloidal sulfur, even when administered in large doses, does not alter the course of rheumatoid arthritis. While the number of cases so treated is small, the uniformity of the results renders them significant. Colloidal sulfur therapy in the authors' opinion is but another antirheumatic remedy which can be dispensed with with considerable saving of expense to the patient. The data presented here are in agreement with the action taken by the Council on Pharmacy and Chemistry of the American Medical Association, which has been unwilling to include in its list of new and nonofficial remedies any of the colloidal sulfur preparations now on the market.

New Jersey Medical Society Journal, Trenton

37:95-140 (March) 1940

*Hormone Treatment of Senile Vulvovaginitis: Report of Fifty Cases. Rita S. Finkler and Zelda I. Marks, Newark.—p. 99.
Simplified Method of Intravenous Injection. A. S. Goldsmith, North Bergen.—p. 106.
Treatment of Intestinal Obstruction with Double-Barreled Intestinal Tube. W. O. Abbott, Philadelphia.—p. 108.
Staphylococcic Septicemia Which Recovered by Use of Sulfapyridine: Case. P. M. Pegau and C. C. Reed, Woodbury.—p. 111.

37:141-188 (April) 1940

Roentgen Study of Urinary Lithiasis. J. J. Szymanski, Passaic.—p. 145.
Regional Ileitis: Summary and Case Report. W. A. Leff, Newark.—p. 150.
Study of Neonatal Deaths in Philadelphia During 1938. R. M. Tyson, Philadelphia.—p. 154.

Endocrine Treatment of Senile Vulvovaginitis.—Finkler and Marks administered estrogen to fifty patients presenting symptoms of senile vulvovaginitis. The symptoms consisted of pruritus vulvae, pruritus ani, and dyspareunia due to partial stenosis of the introitus and sclerosing changes in the vulva and perineum. Most of these patients presented in addition to the local symptoms varying degrees of vasomotor and mental disturbances. The estrogen preparations were administered by injection, inunction of the vulvovaginal area, suppository and/or orally. For the purpose of comparison, some of the patients were shifted from one type of therapy to another when, after a period of rest, regression had occurred. The effect of the therapy was studied and checked by bio-assays, vaginal smear and endometrial and vaginal biopsy. The selection of the type of therapy to be used varies from patient to patient and depends on the severity of the symptoms, the local condition present, whether local or general symptoms predominate and the cooperation of the patient. Varying degrees of improvement in local and general symptoms resulted from all four routes of administration of the estrogen. The greatest relief from general symptoms was obtained from intramuscular injections. Oral medication used in adequate potency gave similar relief. Amelioration of symptoms was achieved in most of the fifty patients. Incomplete response or failure was observed in twelve patients who had complicating medical conditions such as diabetes, eczema, extensive leukoplakia, atrophy due to radiation therapy and vulvectomy for a preexisting kraurosis vulvae, hypertrophic pathologic changes in the vulva, psoriasis and psychoneurosis.

Northwest Medicine, Seattle

39:81-118 (March) 1940

Icterus Gravis Neonatorum. J. B. Bilderback and M. L. Bridgeman, Portland, Ore.—p. 85.
Otitic Intracranial Complications: Procedures in Diagnosis. O. M. Rott, Spokane, Wash.—p. 92.
Oxychalysis: Report of Case. D. D. McRoberts, Lewiston, Idaho.—p. 95.
Chronic Sepsis and Systemic Disease. M. J. Fuendeling, Twin Falls, Idaho.—p. 97.
Peptic Ulcer and Pellagra: Report of Three Surgical Cases. D. Metheny, Mary W. Northrop and Helen Kantner Brown, Seattle.—p. 101.
The Sprue Syndrome. A. H. Ross, Eugene, Ore.—p. 103.

Ohio State Medical Journal, Columbus

36:241-348 (March) 1940

*Comparative Use of Sulfapyridine and Specific Serum in Pneumococcic Pneumonia. J. M. Ruegsegger, M. Hamburger and Sarah L. Cockrell, Cincinnati.—p. 257.
Stricture of Rectum (Lymphopathia Venerea). A. G. Carmel, Cincinnati.—p. 262.
Renal Infarct: Report of Case. A. D. Vogelsang, Toledo.—p. 269.
Thrombo-Angiitis Obliterans. F. A. LeFevre, Cleveland.—p. 272.
Turricephaly, Turmschadel or Oxycephaly with Craniostenosis. S. J. Webster and J. E. Morgan, Cleveland.—p. 277.
Incidence of Auricular Fibrillation in Mitral Stenosis with Congestive Failure. L. Walzer, Cleveland.—p. 281.
Allergy as Factor in General Medicine. O. Berghausen, Cincinnati.—p. 284.
Biologic Assay of Thyroid Activity. F. E. Hamilton, Columbus.—p. 286.
Evaluation of Obstetric and Gynecologic Anesthesia. R. J. Whitacre and A. J. Fisher, Cleveland.—p. 290.

Sulfapyridine and Specific Serum in Pneumonia.—Ruegsegger and his associates compared the efficacy of sulfapyridine with type specific antipneumococcus serum. The alternate case method was employed for a period of approximately six months. Only those patients who had had pneumonia for less than 120 hours were included in the study. Types I to VIII were alternated within the individual types; the higher types IX to XXXII were alternated without regard to type. The dosage of serum was from 100,000 to 200,000 units for the patients without bacteremia and roughly double these amounts for those with bacteremia. Patients receiving sulfapyridine were given 2 Gm. of the drug immediately and 1 Gm. every four hours night and day. The drug was administered by mouth. If vomiting occurred within thirty minutes the dose was repeated. There were twenty-nine men and sixteen women in the serum treated group and twenty-nine men and twenty women in the group receiving sulfapyridine. The serum treated group contained more patients in whom the pulmonary lesion on admission was limited to one lobe. In each group seven patients had bacteremia; of these, one of the serum treated group and two of those receiving the drug died. A symptom or symptoms which presumably represented clinical serum sickness developed in twelve patients. One patient showed no response to serum and had a spontaneous crisis four days later. Empyema developed in two patients subsequent to clinical improvement after serum therapy; both required surgical drainage. The average dose of sulfapyridine for the entire series was about 33 Gm. Ingestion of the drug was followed in slightly more than half of the patients by nausea and/or vomiting. In no instance was therapy interrupted because of vomiting. Two patients showed sharp decrease in the number of circulating leukocytes, with a return to normal after discontinuance of the drug. It was observed in three other patients that a relative leukopenia was not a contraindication to this form of chemotherapy. One patient showed a rapid decrease in his erythrocyte count during drug therapy; iron therapy and discontinuance of the drug was followed promptly by a restoration to normal. The most dramatic effect of sulfapyridine therapy was the critical drop in temperature, which occurred usually within the first eighteen hours of therapy. Unlike spontaneous or serum induced crises, this drop of temperature was rarely associated with marked clinical improvement. There was no apparent relation between the blood sulfapyridine level and decrease in temperature; in several instances it actually occurred when only a trace of the drug could be demonstrated in the blood. It apparently cleared the blood stream of seven of the eight patients who had bacteremia. Empyema developed in only one patient in this group and his pleural cavity was sterilized without resort to surgical intervention. Sterilization took place by a gradual reduction in the number of encapsulated organisms rather than by a decapsulation of the organism. The authors feel that neither specific serum nor sulfapyridine is entitled to an exclusive position in the therapy of pneumococcic disease of the lungs. There is no apparent incompatibility between the two agents and it is suggested that the best results can be obtained by combining the two. There were two fatalities among the forty-five patients treated with specific antipneumococcus serum and six among the forty-nine patients treated with sulfapyridine.

Oklahoma State Medical Assn. Journal, Oklahoma City

33:1-58 (March) 1940

Heterophoria. C. H. Haralson, Tulsa.—p. 1.
Peripheral Vascular Diseases: Diagnosis and Treatment. J. F. Hamilton, Memphis, Tenn.—p. 3.
Acute Infective Laryngotracheobronchitis. G. R. Felts, Oklahoma City.—p. 9.
Some Problems in Syphilis Control in Oklahoma. D. V. Hudson, Tulsa.—p. 12.
Tularemia. G. R. Booth, LeFlore.—p. 15.

Pennsylvania Medical Journal, Harrisburg

43:753-896 (March) 1940

Management of Scarlet Fever and Its Complications. J. A. Toomey, Cleveland.—p. 769.
Clinical Pathologist and Acute Appendicitis. F. W. Konzelmann, Philadelphia.—p. 775.
Errors of Omission and Commission in Acute Appendicitis. J. P. Replogle, Johnstown.—p. 778.
*Statistical Study of 5,977 Cases of Pneumonia, with Mortality Statistics of 9,162 Serum and Sulfapyridine Treated Cases Collected from Recent Literature. C. P. Faller, K. E. Quickel and C. W. Smith, Harrisburg.—p. 789.
Clinical Résumé of Cervical Lymph Gland Disease. G. J. Kastlin, Pittsburgh.—p. 801.
Pancreatic Islet Tumors with Hypoglycemia. D. P. Greenlee, Pittsburgh.—p. 809.
Status of Geriatrics. J. T. Freeman, Philadelphia.—p. 813.
Management of the Prostatic Patient. P. P. Mayock and J. B. Purcell, Wilkes-Barre.—p. 817.
Acute Fulminating Fronto-Ethmoiditis. T. B. McCullough, Pittsburgh.—p. 821.

Statistical Study of Pneumonia.—Faller and his co-workers obtained through questionnaires fairly complete data on 5,977 cases of pneumonia occurring in Pennsylvania from January 1938 to July 1939. The gross mortality was 22.1 per cent, or 1,321 deaths. The highest incidence was during the winter and early spring months. A relatively high incidence was demonstrated in infancy and early childhood, with a relatively low incidence in middle life and a greater prevalence of both lobar pneumonia and bronchopneumonia in later life. The incidence did not differ markedly for the two sexes, but there was a greater incidence of both lobar pneumonia and bronchopneumonia in male than in female patients. The incidence of the ten most common types in order of frequency was I, II, III, VII, VIII, V, IV, XIV, VI and XIX. There was a tendency of the higher types of pneumonia to be more frequent in childhood. The mortality for pneumonia patients treated by nonspecific methods was 30.83 per cent and 10.69 per cent for those treated with sulfapyridine. The mortality for patients treated with specific antipneumococcus serum was 17.84 per cent. The mortality for patients treated with both serum and sulfapyridine was higher (14.67 per cent) than for those treated with sulfapyridine alone. The probable explanation for this is that sulfapyridine therapy is used too long before serum is begun. If a beneficial response is to be obtained with sulfapyridine, it should be evident within twenty-four hours. The mortality increased with each day for which specific serum treatment was delayed. The lowest mortality rates were with sulfapyridine, and with sulfapyridine with serum. In the cases in which serum and sulfapyridine were used on the first day of the disease no deaths occurred. Serum used after the third day, either with or without sulfapyridine, did not lower the mortality. A lamentably small number of blood cultures were performed among the pneumonia patients throughout the state as a whole. Because of the prognostic significance of a positive blood culture and its guidance as to the dosage of serum, blood cultures should be performed in a routine manner. Otitis media and empyema accounted for the majority of complications in children. Empyema was the most common complication in adults, with a mor-

tality of 22.4 per cent. Only one case of granulocytopenia was reported. It was fatal and occurred in a sulfapyridine-treated case. From a survey of the recent literature on pneumonia the authors collected 5,554 additional serum-treated cases and 3,608 additional sulfapyridine-treated cases. The mortality for the serum-treated cases was 15.79 and for the sulfapyridine-treated cases 6.26 per cent. Mortality for the combined 6,462 serum-treated cases was 16.07 per cent and for the 4,739 sulfapyridine-treated cases 7.32 per cent.

Public Health Reports, Washington, D. C.

55:441-484 (March 15) 1940

The National Health Survey: Some General Findings as to Disease, Accidents and Impairments in Urban Areas. R. H. Britten, S. D. Collins and J. S. Fitzgerald.—p. 444.
Sanitary Units on Ships: Organization and Operation. G. C. Sherrard. —p. 470.
Skin Hazards in American Industry: Part III. Review. L. Schwartz. —p. 473.

Review of Gastroenterology, New York

7:103-202 (March-April) 1940

The Problem of Peptic Ulcer. J. J. Hepburn, Boston.—p. 103.
Gastrointestinal Disturbances Due to Bacterial Toxemia from Focal Infection. M. Solis-Cohen, Philadelphia.—p. 112.
Congenital Bands and Adherences: Symptomatology and Treatment. C. W. Strickler, Atlanta, Ga.—p. 124.
Temperature of Gastrointestinal Tract and Effect Thereon of Hot and Cold Drinks and of Physical Therapeutic Agents. H. M. Eberhard, Philadelphia.—p. 133.
Complications of Diaphragmatic Hernia. I. R. Jankelson, Boston, and S. Morein, Providence, R. I.—p. 134.
Lymphogranulomatous Strictures of Rectum: Treatment by Diathermy. H. Martz, Birmingham, Ala., and M. N. Foote, Brooklyn.—p. 144.
Growth of Carcinoma of Anus and Rectum. C. J. Drueck, Chicago.—p. 154.
Diagnosis of Proctologic Complaints in Office Practice. A. L. Reich, Newark, N. J.—p. 158.
Interesting Gastrointestinal Cases with Roentgenologic Findings. T. S. Heineken, Bloomfield, N. J.—p. 163.
Xanthoma Diabeticorum. C. W. Finnerty, Boston.—p. 166.
Control of Hemorrhage in Patients Operated on for Obstructive Jaundice. J. E. Rhoads and I. S. Ravdin, Philadelphia.—p. 169.
Surgical Management of Acute Cholecystitis. J. F. McCloskey and J. A. Lehman, Philadelphia.—p. 176.
Evaluation of Liver Function Tests. J. Gerendasy, Elizabeth, N. J.—p. 183.
Study of Etiologic Relation of Ingestion of Infected Pig Meat Products to Pathogenesis of Catarrhal Jaundice. M. Perlmutter, Brooklyn.—p. 188.

Southern Medical Journal, Birmingham, Ala.

33:229-336 (March) 1940. Partial Index

Abandonment of Ligations Preliminary to Thyroidectomy. W. Bartlett Jr., St. Louis.—p. 229.
Extensive Radical Resection for Malignant Disease of Stomach. C. J. Hunt, Kansas City, Mo.—p. 234.
Primary Carcinoma of Jejunum. W. R. Brooksher, Fort Smith, Ark.—p. 238.
*Anemia of the Newborn. H. L. Dwyer and F. C. Neff, Kansas City, Mo.—p. 246.
*Malarial Therapy in Dementia Paralytica: Statistical and Sociologic Study of 300 Cases Treated with Tertian or Quartan Malaria and Tryparsamide Over Seven Year Period. J. R. S. Mays, J. W. Oden and C. G. Cox, Milledgeville, Ga.—p. 255.
Muscular Atrophy and Weakness in Thyrotoxicosis (Thyrotoxic Myopathy): Exophthalmic Ophthalmoplegia). H. J. Morgan and R. H. Williams, Nashville, Tenn.—p. 261.
Tumors of Glomus (Glomangiomas or Angiomyoneuromas). R. W. Fowlkes and A. W. Pepple, Richmond, Va.—p. 269.
Use of Beta Ray of Radium Applicator: Description of Method and Results Obtained in Superficial Lesions of Eye. C. F. Burnam and W. Neill Jr., Baltimore.—p. 279.
Radium Needles in Treatment of Carcinoma of Cervix and Vagina. A. N. Arneson and H. Hauptman, St. Louis.—p. 286.
Some General Principles in Bedside Diagnosis of Heart Disease. T. R. Harrison, Nashville, Tenn.—p. 308.
Clinical Experience with Mercurial Diuretics in Prevention of Acute Paroxysmal Dyspnea. E. F. Horine, Louisville, Ky.—p. 315.
Comparison of Streptococcus Pyogenes and Streptococcus Epidemicus. Alice C. Evans, Washington, D. C.—p. 318.
Diphtheria in Tennessee: Administrative Aspects in Its Control. W. V. Sanford, Ruth R. Puffer, C. B. Tucker and A. E. Hardison, Nashville, Tenn.—p. 321.

Anemia of the Newborn.—Dwyer and Neff cite the cases of two newborn infants with anemia associated with erythroblastosis and icterus, in which blood transfusion was followed promptly by a return to normal. Another newborn infant with anemia, in whom erythroblastosis and icterus were not present, did not respond to repeated transfusions. However, the use of liver extract hypodermically was followed by the appearance of reticulocytes and immature granulocytes immediately, with a gradual return to normal blood values. This suggests that erythroblastic hemolytic anemia of the newborn is differentiated from the nonerythroblastic type not only clinically, hematologically and pathologically but possibly also by the response to blood transfusions. The case of a fourth infant with a severe grade of anemia of nearly four years duration, which was refractive to transfusions as well as liver and iron therapy, is reported. The anemia began in the newborn period and, unlike the majority of cases of aplastic anemia, the aplasia was confined to the erythropoietic organs. Postmortem observations were not characteristic of aplastic anemia. In a rather loose grouping of these rare forms of anemia in early life it is regarded as a case of hypoplastic-aplastic anemia of the newborn.

Malarial Therapy in Dementia Paralytica.—In the past seven years 304 cases have been treated with tertian malaria at the Milledgeville State Hospital as a routine treatment for neurosyphilis, according to Mays and his associates. Nine months ago a strain of quartan malaria was introduced for cases which were immune to the tertian strain and for cases in which the serums were still strongly positive after treatment with tertian malaria. Twenty-two of the 304 patients receiving the tertian strain were later treated with the quartan strain of malaria; fifteen other patients were also treated with quartan malaria. Their experience with the two types of malaria suggested that the quartan malaria is preferable to the tertian malaria because of its higher improvement rate, its lower death rate and its more prolonged temperature elevation. The most favorable reaction was obtained in the grandiose-excited type of patient and the least favorable outlook for recovery was in the simple deteriorated type. It appears that the severity of the paroxysms, rather than their number, is the therapeutic desideratum. In debilitated patients it is frequently advisable to precede malarial therapy with a course of tryparsamide and thiobismol. The death rate can be materially lowered by careful observation and proper symptomatic treatment of the patient during the acute and postmalarial period. During the febrile periods the patient should receive fruit juices and sodium chloride. Anemia and cachexia will improve with tube feeding, ferrous sulfate administration and repeated small transfusions of whole blood. Psychotic symptoms, such as hallucinations, grandiose or paranoid delusions and hypochondria, frequently show an exacerbation during the period of acute malaria, but these clear up readily with the administration of quinine. Convulsions appearing in cases of dementia paralytica tend to decrease the recovery rate and to increase the mortality rate. There was no significant improvement in the neurologic symptoms following malarial therapy.

Southern Surgeon, Atlanta, Ga.

9:223-300 (April) 1940

Problems in Treatment of Burns: Liver Necrosis as a Lethal Factor. R. D. McClure and C. R. Lam, Detroit.—p. 223.
Importance of Early Diagnosis of Urologic Affections. E. G. Ballenger, H. P. McDonald and R. C. Coleman Jr., Atlanta, Ga.—p. 235.
Dermoid Cysts Complicating Pregnancy: Report of Case of Bilateral Dermoid Cysts with Torsion of One Complicating a Pregnancy Which Terminated Normally in Spite of Excision of Both Ovaries. L. S. King, Philippi, W. Va.—p. 241.
Rationale of Splenectomy in Treatment of Certain Anemias. G. M. Curtis, Columbus, Ohio.—p. 249.
Complete Indirect Inguinal Hernias: Study of 305 Hernias and Repairs. H. J. Shelley, Fort Worth, Texas.—p. 257.
Relationship of Unilateral Kidney Disease to Hypertension: Report of Case Cured by Nephrectomy. N. F. Ockerblad, Kansas City, Mo.—p. 269.

Southwestern Medicine, El Paso, Texas

24:81-114 (March) 1940

Pneumonia: Statistical Survey for 1939 for St. Joseph's Hospital, Sulfapyridine and Early Diagnosis. L. R. Kober, S. R. Caniglia and K. Thayer, Phoenix, Ariz.—p. 81.
Management of Surgical Lesions of Biliary Tract. G. B. Kent and K. C. Sawyer, Denver.—p. 86.
Unusual Positions and Conditions of Vermiform Appendix. D. L. Secrist, Tucson, Ariz.—p. 88.
Management of Diabetes. P. Corr, Riverside, Calif.—p. 92.
Rehabilitation of Congenital Spastic Paralysis (Little's Disease). W. C. Curphey, Las Vegas, N. M.—p. 94.
Mastoid Infections. W. E. Vandeverre and M. P. Spearman, El Paso, Texas.—p. 97.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

15:1-64 (March) 1940

Soya Bean Flour with Dried Milk: Cheap and Efficient Substitute for Breast Milk. Helen M. M. Mackay.—p. 1.
The Schilling Hemogram in Otitis Media and Mastoiditis of Infancy. E. C. R. Cooper.—p. 27.
*Stomatitis in Childhood. C. G. Parsons.—p. 43.
Staphylococcus Aureus Infection of Long Bones in the Newborn. Jean M. Cass.—p. 55.

Stomatitis in Childhood.—Among 115 children suffering from stomatitis Parsons found that it was not always possible to classify the cases into general types: aphthous, catarrhal, mycotic or thrush, ulcerative, gangrenous or noma and symptomatic stomatitis. Generally the clinical and bacteriologic features of the stomatitis of children less than 2 years of age differed from that of older children. Sixty-seven of the 115 children were girls. The youngest patient was 13 days old and the oldest 11 years. More than half of the cases occurred in children less than 2 years of age and four fifths before the third birthday. The incidence of the disease diminished progressively as age increased. The most common symptoms were sore mouth, anorexia and malaise. Diarrhea was common in children of the young group, constipation in the older children. Vomiting was frequent in all. Pyrexia was considerably higher in the older group. Toxic, grayish pallor without obvious anemia was an exceedingly common symptom. Stomatitis occurred in the young artificially fed children or those who sucked dummies. It was usually due to thrush, even when aphthous ulceration was the chief sign. There was little or no odor, and the cervical glands were not involved. Gastro-enteritis was an extremely serious complication. There was no distinct division between this type of stomatitis and the one occurring in older children. The stomatitis of older children was of the Vincent type but was often complicated by aphthous ulceration, while inflammation, offensive odor and glandular enlargement were the rule. The organisms concerned were anaerobes, but an underlying organism of unknown character, possibly a virus, was probably the cause, and aphthous ulceration merely a symptom. An absolute and relative monocytosis was found in many cases of stomatitis in all age groups. It was quite characteristic but the reason for its occurrence is unknown. Various forms of treatment were tried but local application of either 1 per cent aqueous solution of gentian violet or tincture of merthiolate was most effective. Symptomatic relief was particularly rapid. There was no evidence to implicate vitamin deficiency.

Brain, London

63:1-122 (March) 1940

*Forms of Growth in Gliomas and Their Practical Significance. H. J. Scherer.—p. 1.
Pyramidal Lesion in Monkey. Sarah S. Tower.—p. 36.
Angio-Architecture of Gliomas. J. Hardman.—p. 91.

Gliomas and Their Significance.—Scherer studied in necropsies the mode of growth of 120 cases of glioma. Celloidin sections including the whole tumor with surrounding tissues from one end of the glioma to the other were utilized in the study. This method is indispensable, as the majority of gliomas are more extensive than their macroscopic aspect might lead one to suppose. All gliomas, except ependymoma, show an infiltrative type of growth, although in widely differing degrees, by no means corresponding to the more or less "malignant" aspect of the glioma cells. Cerebral astrocytomas are the most invasive of all cerebral tumors, while glioblastomas include a considerable percentage of fairly well defined neoplasms with a narrow zone of growth. The cytologic tumor entities include gliomas of quite different types of growth, proving that cytology and histogenesis are insufficient to characterize the biologic behavior of a given glioma. Only about 30 per cent are relatively circumscribed tumors; their real extent exceeds but moderately their macroscopically visible limits. This group includes oligodendrogliomas, many cerebellar astrocytomas and certain medulloblastomas. Factors underlying this surgically rather favorable mode of growth are (1) a narrow, compact zone of growth, (2) a halting of the tumor at certain preexisting structures, especially the cortex, and (3) degenerative processes at the edge. Tumors of the hippocampal region and the septum lucidum grow frequently in the form of round, expansive masses in the ventricular cavity. About 60 per cent of gliomas have a more diffuse character with a widespread zone of growth considerably exceeding the macroscopically visible "tumor" and involving more than one lobe. Nearly 35 per cent show what is probably a secondary diffuse growth, while 25 per cent must be considered as primarily diffuse neoplastic processes forming no circumscribed tumor. All cerebral astrocytomas belong to this group. In the common case of malignant dedifferentiation of an astrocytoma into a glioblastoma, often the glioblastoma alone is visible as a macroscopic "tumor," surrounded by a large astrocytoma zone the true character of which is discovered only by microscopic examination. About 10 per cent of gliomas show a primarily multicentric type of growth and in half of these cases this multicentricity is visible only on complete microscopic study. The macroscopic examination shows only one main tumor. Infiltration and destruction by growth are by no means necessarily associated in gliomas. Long-continued preservation of nerve cells and fibers in the midst of tumor tissue is not specific for astrocytomas (although most constant) but occurs also in glioblastomas.

British Journal of Radiology, London

13:73-108 (March) 1940

Irradiation Assailed, or the Buried Talent. E. R. Carling.—p. 73.
Neutron Generator for Biologic Research. L. H. Gray, J. Read and J. G. Wyatt.—p. 82.
Determination from Absorption Data of Distribution of X-Ray Intensity in Continuous X-Ray Spectrum. D. E. A. Jones.—p. 95.
Pineal Localization: Rapid Direct Method. E. P. Allen.—p. 102.
Protection in Radium Teletherapy at Westminster Hospital: Summary of Measurements of Gamma Ray Doses Made Over a Number of Years with Condenser Ionization Chambers Carried by the Staff. C. W. Wilson.—p. 105.

Journal of Endocrinology, London

1:367-516 (Dec.) 1939

Effects of Androgens on Mammary Gland of Female Rhesus Monkey. G. van Wagenen and S. J. Folley.—p. 367.
Response of Inbred Mice to Estrone. C. W. Emmens.—p. 373.
Mutual Antagonism Between Estrogens and Androgens. C. W. Emmens and T. E. T. Bradshaw.—p. 378.
Effect of Vasopressin, Sex Hormones and Adrenal Cortical Hormone on Body Water in Axolotls. D. Dow and S. Zuckerman.—p. 387.
Contributions to Research on Female Sex Hormones: Implantation of Mouse Egg. Suzanne Bloch.—p. 399.
Growth of Reproductive and Endocrine Organs of Female Rabbit. C. W. Emmens.—p. 409.
Effect of Progesterone on Gonadotropic Potency of Rat's Pituitary. H. Burrows.—p. 417.
Disturbance of Growth by Diethylstilbestrol and Estrone. J. H. Gaarenstroom and L. H. Levie.—p. 420.
Observations on Secondary Sexual Characters in Monkeys. S. Zuckerman and A. S. Parkes.—p. 430.
Effects of Digestion by Proteolytic Enzymes on Gonadotropic and Thyrotropic Potency of Anterior Pituitary Extract. B. F. Chow, R. O. Greep and H. B. van Dyke.—p. 440.
Observations on Metabolism of Dogs Made Permanently Diabetic by Treatment with Anterior Pituitary Extract. H. P. Marks and F. G. Young.—p. 470.

Lancet, London

1:583-628 (March 30) 1940

*Lupus Erythematosus: Effects of Sulfonamides. H. W. Barber.—p. 583.
Mystery of Alimentation. E. P. Cathcart.—p. 586.
*Diluents for Stored Blood. M. Maizels and N. Whittaker.—p. 590.
Tumor Cells in Sternal Bone Marrow. L. Kreyberg and E. Poppe.—p. 593.
*Cause of Breech Presentation. C. K. Vartan.—p. 595.
Pfeiffer Bacillus Meningitis, Successfully Treated with Sulfapyridine, Complicated by Granulopenia. J. Sakula.—p. 596.
Picrotoxin in Treatment of Collapse Due to Barbiturates. S. W. Gillman.—p. 598.

Sulfonamides in Lupus Erythematosus.—Barber's experience in the last twenty years strengthened his earlier (1915) belief that in some cases of lupus erythematosus the cutaneous reaction may be due to streptococcic and possibly other infections. He employed sulfonamides in lupus erythematosus for two and a half years. Most of the patients were investigated to determine whether tuberculous, streptococcic or other chronic infections were present. In the few in whom tuberculosis

appeared likely to be responsible the eruption was not benefited. In most cases a chronic and often widespread streptococcic infection was found. When such foci were present they were removed before treatment with sulfonamides was begun. In some no foci were discovered but the patients gave a history of previous removal of foci or of acute diseases presumably streptococcic in origin, such as recurrent tonsillitis, scarlet fever or rheumatic fever. Most patients felt acutely ill after azosulfamide or sulfapyridine therapy for from eight to fourteen days. Their temperature rose, sometimes preceded by a chill. In some cases a generalized scarlatiniform eruption appeared. This was regarded as due to the liberation of streptococcic toxin by the drug from latent foci of infection. It differs from other types of eruption provoked by these drugs. This scarlatiniform erythema did not recur after subsequent administration of the drug. In several cases focal reactions were evident in the patches of lupus erythematosus. The reactions at times were accompanied by severe rheumatic pains and at times by swelling and tenderness of the lymph nodes. The drug was discontinued when the reactions developed, and the symptoms rapidly subsided. The therapeutic effects were good. Some patients had previously received gold salts or bismuth compounds but they declared that the effects of azosulfamide or of sulfapyridine were superior. Several patients had relapses after their lesions had entirely or partially disappeared. In no other disease has the author observed reactions comparable to those which have developed with such remarkable uniformity in lupus erythematosus. The severity of the reactions makes it imperative that the patient be warned that such reactions are likely to develop and that the drug be omitted as soon as symptoms arise. Ambulatory treatment should never be attempted in the presence of an acute, widespread eruption. The patient must rest in bed for several days before beginning a course of the drug. The dose was seldom more than one tablet three times a day and was often less.

Diluents for Stored Blood.—Maizels and Whittaker investigated the effect of tonicity and the p_H on the survival of cells in stored blood. They found that the cells of blood stored with the standard citrate-saline solution (0.85 per cent of sodium chloride, 1.05 per cent of sodium citrate), which is hypertonic, are hypertonic, whereas cells stored with a truly isotonic solution (0.43 per cent of sodium chloride, 1.05 per cent of sodium citrate) are isotonic. After a month's storage the hypertonic cells show more hemolysis. If the unhemolyzed cells of each system are then mixed with fresh normal plasma, the hypertonic erythrocytes show a further 50 per cent hemolysis and the isotonic cells show no lysis at all. Blood cells stored with a truly isotonic anticoagulant solution are therefore much more likely to survive after transfusion. If storage is prolonged, sodium salts flow into the cells, which swell and finally hemolyze. If acid is added to a saline-citrate-blood mixture so as to decrease the p_H to about 6.6, hemolysis is reduced by about half, probably owing to decreased penetration of cation at low p_H. If carbohydrate is added to stored blood, sodium penetration and cell swelling are decreased, and at six weeks hemolysis is about a tenth of that observed in simple salt solutions. A suitable anticoagulant diluent for blood is 0.43 per cent of sodium chloride and 1.05 per cent of sodium citrate. It is desirable to add dextrose or dextrin in a final concentration of 1 and 3 per cent, respectively, to improve preservation. If this is done the system becomes slightly more acid. To counteract cell swelling due to acidity it may be desirable to increase the sodium chloride in the solution to 0.5 per cent.

Cause of Breech Presentation.—According to Vartan, most of the factors reported as causes of breech presentation at term rarely occur. He concludes that either the "cause" is so rare as to be almost a chance coincidence or that the cause in almost every case is unknown. An analysis of 969 cases of breech delivery demonstrated that it is wrong to assert that the cause of the breech presentation at term is a pelvic anomaly which prevents the head from entering. Such conditions cause the oblique position. The cause of breech presentation persisting till term is to be seen in the failure of the fetus to undergo spontaneous cephalic version. The fetus is prevented from undergoing version by its extended attitude in 37.3 per cent of the cases, by the presence of another fetus in the uterus in 23.6 per cent of the cases, and by prematurity in 9 per cent. In 22.9 per cent of the cases no cause is recorded. The percentage of cases in which placenta praevia is associated is so small as to make it doubtful whether this can be called an etiologic factor. For the same reason contracted pelvis cannot be regarded as an etiologic factor. Pelvic tumors, abnormally shaped uterus, hydrocephalus, hydramnios and anencephaly are too rare to be of significance.

Medical Journal of Australia, Sydney

1:361-396 (March 16) 1940

Harelip and Cleft Palate. K. B. Fraser.—p. 361.

1:397-428 (March 23) 1940

Serologic Response to Influenza Virus Infection During Epidemic, with Particular Reference to Subclinical Infection. F. M. Burnet, J. F. J. Cade and Dora Lush.—p. 397.
Industrial Eye Injuries. D. R. Gawler.—p. 401.
Sternal Biopsy. T. E. Wilson.—p. 405.
Operation for Ankylosing Knee Joint. N. D. Royle.—p. 410.

Proceedings of Royal Society of Medicine, London

33:237-294 (March) 1940

Extra-Abdominal Resection of Colon. V. Z. Cope.—p. 249.
Electrically Induced Convulsions. W. G. Walter and G. W. T. H. Fleming.—p. 261.
Clinical Applications of Electrically Induced Convulsions. W. H. Shepley and J. S. McGregor.—p. 267.
*Preliminary Observations on Use of Convalescent Serum in Treatment of Acute Rheumatism. C. A. Green, A. J. Glazebrook, S. Thomson and W. A. Hopkins.—p. 275.

Convalescent Serum in Acute Rheumatism.—Green and his associates observed a considerable amount of acute rheumatism in communities of young male adults engaged in strenuous physical training. In the majority of cases nasopharyngeal infection antedated the insidious onset of stiffness and pain in one or more joints. In others the disease appeared with hyperpyrexia, sweating and polyarthritis. Large effusions were not common, but tenderness, slight puffiness and edema of surrounding tissues were common. The joint lesions rapidly improved and left no permanent injury. The initial pyrexia rarely lasted longer than one week but in exceptional cases persisted for months. Remissions and relapses occurred frequently. Cardiac complications were frequent, despite the apparent mildness of infection. A number of patients did not show any tendency to develop cardiac lesions. As the patients were otherwise healthy young adults, it was decided that serum obtained from them during convalescence should be tried in the acute phases of the disease in subsequent cases. From 300 to 400 cc. of blood was obtained between the fourth and eighth week after the temperature had settled. Criteria of suitability included good general condition, absence of cardiac complications and an almost normal erythrocyte sedimentation rate. Following withdrawal of the blood, the serum was separated, filtered and preserved by the addition of phenol. The serum was subjected to the Wassermann and the routine sterility tests. This type of serum has been used in the treatment of fifteen patients. The serum was given either intramuscularly or intravenously in daily doses of from 10 to 20 cc. The injections were usually repeated for several days. Ten patients were treated with serum alone and seven of these, six with primary attacks and one with a recurrence, reacted favorably. In the five cases of the second group, serum therapy supplemented other treatment such as exhibition of salicylates. Three of these five patients returned to work without carditis. The authors gained the impression that, when given in the early stages of an attack, serum apparently reduced the period of pyrexia, particularly in primary attacks. Arthritic pain was relieved in such cases. The volume of serum was not large enough to permit really adequate dosage in every case, but the results obtained justify further extension of this method.

Tubercle, London

21:121-152 (Jan.) 1940

Impressions After Sixteen Years' Experience in a Tuberculosis Settlement. E. L. Sandiland.—p. 121.
Pregnancy and Tuberculosis. B. S. Pollak and B. P. Potter.—p. 128.
Protamine Zinc Insulin in Treatment of Diabetes Complicated by Tuberculosis. E. Nassau.—p. 132.

Gynécologie, Paris

38:565-616 (Nov.-Dec.) 1940

*Case of Antepartum Peritonitis of Undetermined Origin: General Review of Peritonitis of Pregnancy. A. Laffont and M. Piétri.—p. 565.

Peritonitis of Pregnancy.—Laffont and Piétri report a case of acute generalized antepartum peritonitis of obscure origin in which surgical exploration failed to reveal the source. The particular susceptibility of the peritoneum of pregnant women is the decisive factor in peritonitis of obscure origin. Microbic inoculation, however indispensable, exerts its action only because of this factor. It is the anergy of the peritoneum which increases the power of invasion of a perhaps minimal microbic inoculation. This explains the paucity of surgical and postmortem observations. The incidence of this form of peritonitis is insignificant. Some of the cases arise from an indisputably septic focus, such as peritonitis supervening on a cutaneous pneumococcic or staphylococcic infection. There is a group of cases in which the following factors are of etiologic significance: vulnerability of the peritoneum of pregnancy, occult infection of the serosa without a rupture of a viscus, monomicrobism as opposed to the multimicrobic invasion of perforating peritonitis, almost invariable death of the fetus in premature delivery and its occurrence in the last trimester of pregnancy. Nine similar cases are analyzed. The colon bacillus is the common etiologic factor in this form of peritonitis, which is difficult to differentiate from the appendicular form. Except in the cases in which premature delivery is induced, the treatment consists in surgical intervention and drainage. The approach is made by way of the right iliac fossa in order to permit differentiation from appendicitis. The patient is given sufficient morphine to avoid premature delivery. The iliac incision calls for careful observation while one is awaiting the term. If the wound is not healed at term, it may be utilized in the performance of an atypical cesarean section.

Presse Médicale, Paris

48:305-328 (March 20-23) 1940

Temperature Curves and Endocrine Injections in Gynecology. P. Mocquot and R. Palmer.—p. 305.
Arthrodesis in Tabetic Arthritis. Costantini and Kehl.—p. 308.
*Roentgenologic Detection of Foreign Intraperitoneal Fluids in Peritonitis, Hemoperitoneum and Perforations. A. Cosacesco, N. David and C. Stanesco.—p. 310.
*Average Diameter of Erythrocytes as Diagnostic Aid in Differentiation of Icteri. L. Schalm.—p. 312.

Roentgenologic Detection of Intraperitoneal Fluids.—Cosacesco and his associates stress the diagnostic value of roentgen rays in determining the site and quantity of free fluids in acute abdominal lesions. Nine cases are analyzed from this point of view. The roentgen rays were particularly helpful in demonstrating lateral pus collections which might otherwise have been overlooked. A patient's failure to improve after ample drainage could be traced not to the development of fresh foci but to previously unrecognized pus accumulation. Although roentgenograms suffer from the disadvantage of being able to detect only significant peritoneal effusions, the demonstration of abundant extravasation of blood in shock or of multiple wound lesions is of value in making prompt surgical intervention mandatory. Abdominal roentgenoscopy may also be of value in the postoperative period with obscure manifestations.

Erythrocyte Diameter in Icterus.—Schalm investigated the diagnostic value of macrocytosis for distinguishing icterus in 100 cases other than cirrhosis of the liver. Only cases were considered in which bilirubinuria and a positive van den Bergh serum reaction were observed. The measurements were carried out by means of Pyper's halometer and were repeated during the course of the disease. The author found the diameter measurements decidedly valuable in distinguishing parenchymatous icterus from obstructive icterus. A normal average erythrocyte diameter or one not exceeding 0.7 micron, after icterus had existed for several weeks, indicated an uncomplicated occlusion of bile ducts, irrespective of the cause of obstruction. An average erythrocyte diameter attaining or exceeding 1 micron was proof of extensive destruction or of serious functional impairment of the parenchyma of the liver. The one exception to this observation was certain cases of carcinoma of the head of the pancreas which disclosed a 1 micron diameter increase without concomitant parenchymatous lesions. Borderline measurements between 0.7 and 1 micron, noted in eleven of the 100 cases, were excluded from the inquiry. Repeated tests are necessary to determine whether an icterus presenting initially only a small increase in the average diameter of the erythrocytes might not show within a few days an unexpected enlargement. In all cases in which parenchymatous degeneration developed from simple biliary obstructions, the diameter of the erythrocytes increased by 1 micron or more.

Schweizerische medizinische Wochenschrift, Basel

70:205-224 (March 9) 1940. Partial Index

*Forms of Tuberculosis and Age. M. Dressler and R. Gitermann.—p. 205.
*Brucella Abortus Infection in Prematurely Born Infant. Emmy Buser-Plüss.—p. 208.
Digital Reflex as Pyramidal Sign of Upper Extremities. R. Rosner.—p. 210.

70:249-268 (March 23) 1940

Kathepsin, Second Protease of Gastric Juice. E. Freundenberg and S. Buchs.—p. 249.
Treatment of Large Hemangiomas. K. Lenggenhager.—p. 250.
*Clinical Experiences with Helborsid. M. Grossmann and B. Benzon.—p. 251.
*Forms of Tuberculosis and Age. M. Dressler and R. Gitermann.—p. 254.
Micromethod for Determination of Prothrombin Time. N. Fiechter.—p. 259.
Inanition Psychosis Following a Fasting Cure. M. Efimoff.—p. 260.

Tuberculosis and Age.—Dressler and Gitermann investigated the relation between the form of tuberculosis and the age of patients examined at the Zurich policlinic during 1933. They compare their observations with those of other investigators and arrive at practically the same conclusions. The curve of tuberculous morbidity discloses the maximum of incidence between the ages of 20 and 40; it is reached earlier in women (third decade) than in men (fourth decade). The number of cases is higher among men, with regard both to the open and to the closed tuberculosis. The various forms occur in the two sexes in approximately the same percentage. A curve indicating their distribution over the various age groups indicates that secondary infiltrations appear comparatively early, 50 per cent occurring before the age of 20 and 80 per cent before the age of 30. The early infiltrates are likewise most frequently found in young persons, particularly during the third decade of life. The chronic tertiary forms of tuberculosis develop later and are observed in the highest age groups. Open tuberculosis, in contradistinction to closed tuberculosis, is rarely restricted to one pulmonary field. The apexes and the upper field are especially often involved and about twice as frequent on the right as on the left side. Bilaterality is more frequent in open than in closed tuberculosis (56 and 29 per cent, respectively). Pleuritic complications (pleurisy and adhesions) occur with equal frequency in the two forms; that is, in approximately one third of the cases. Patients with early infiltrate are most often free from pleuritic complications, a factor that is important for collapse therapy. The pleuritic complication is usually (in from 80 to 90 per cent) ipsilateral with the pulmonary process. The preferred localization of the primary focus is the right lower field; then follow the left middle and lower fields.

Brucella Abortus Infection in Premature Infant.—Buser-Plüss reports the occurrence of undulant fever in an infant born two and one half months before term. She assumes that the infection was transmitted either in the uterus or by the breast milk. The typical picture of undulant fever gradually developed possibly because of the gradual decrease in immune bodies supplied by the mother or as the result of weakening by intercurrent diseases. The undulant fever persisted for months, terminating in a cure despite severe complications. The relatively benign character of the disease indicated by the low agglutination titer in mother and child may have been the result of an earlier Brucella infection among the cattle belonging to the family. The premature infant had a Brucella abortus infection which presented typical aspects of undulant fever with numerous complications, especially on the part of the respiratory organs. An intra-uterine infection cannot be here established beyond a doubt, but the following points speak in its favor: (1) latent Brucella abortus infection of the

mother during or shortly before pregnancy, (2) premature birth in the sixth month, presumably as the result of the maternal infection, and (3) insidious appearance and slow development of undulant fever in the infant during the first months of life; that is, at an age which otherwise is immune against Brucella abortus infection.

Clinical Experiences with Helborsid.—Helborsid, according to Grossmann and Benzon, is a solution of hellebrin, crystallized pure glucoside of Helleborus niger. Hellebrin differs from helleborein in being about twenty times more active. Like strophanthin it is a glucoside of the second order, but, in contradistinction to strophanthin, its aqueous solutions are highly stable, retaining their efficacy for years. The pharmacologic properties of hellebrin greatly resemble those of strophanthin. The authors administered helborsid to seventy-four patients with forms of decompensation the result of valvular lesions, myocarditis and coronary sclerosis with or without angina pectoris. They excluded from treatment all patients with mild forms of decompensation in whom bed rest and small oral doses of digitalis produced the desired results. Helborsid was administered intravenously. The initial dose was 0.5 cc. of the solution containing 0.25 mg. of hellebrin, increased later to 1 cc. and rarely to 1.3 cc. The injection was given daily, occasionally twice daily, until the desired effect was obtained. The later treatment was intermittent, like that of modern strophanthin therapy. The total number of injections varied, a few patients receiving as many as thirty. Helborsid is a highly effective cardiac stimulant. Its action is similar and in some respects superior to that of strophanthin. It is less toxic and its secondary effects are either absent or appear later and in a milder form. This makes it possible to treat many patients with severe heart disease, in whom neither digitalis nor strophanthin can be employed because of the rapid development of secondary toxic effects.

Annali di Radiologia Diagnostica, Bologna

16:1-68 (Feb.) 1940. **Partial Index**

*Juvenile Diabetes and Intracranial Hypertension. F. Landogna Cassone. —p. 1.
Pleuropulmonary Reactions After Roentgen Therapy in Cancer of Breast. R. Camerini.—p. 18.

Juvenile Diabetes and Intracranial Hypertension.—Landogna Cassone made a clinical and roentgenologic diagnosis of intracranial hypertension in six of a group of ten children with diabetes. The clinical symptoms, such as frontal headache, vomiting, frequent nausea, hyperemia and edema of the papillary disk, were noted one or two years before the development of diabetes. The roentgenograms showed thinning of the cranium, finger-like shadows on the cranial bones, dilatation of the venous sinuses and alterations of the sella turcica. The author believes that juvenile diabetes is caused by a lesion of the hypothalamus and of the hypophysis, the result of an acquired hydrocephalus and increased intracranial tension. The hydrocephalus is either primary (serous meningitis) or secondary to early synostosis of the cranial bones. A proper medical regimen, diet and decompression are indicated. Decompression can be accomplished by antisyphilitic treatment (even if a diagnosis of syphilis is doubtful), by lumbar puncture repeated at monthly intervals or by trephining.

Deutsches Archiv für klinische Medizin, Berlin

185:393-480 (Jan. 16) 1940

*Circulatory Impairment and Nicotine. B. Weicker.—p. 393.
Significance of Highly Positive T Waves in Electrocardiogram. W. Breu and S. Zollner.—p. 416.
*Value of Vitamin C in Treatment of Acute Infectious Diseases. F. Szirmai.—p. 434.
Especially Mild Form of Suppurating Meningitis. G. Körner.—p. 444.
Clinical Investigations and Animal Experiments on Regulation of Carbohydrate Metabolism in Diphtheria Intoxication. A. Schwerin.—p. 458.
Case of Boeck's Disease. F. Kollbrunner.—p. 471.

Circulatory Impairment and Nicotine.—Weicker reports observations on acute and chronic nicotine poisoning in twenty-four men between the ages of 17 and 53 who smoked daily between fifteen and fifty cigarets. In a man aged 36 who smoked on an average fifty cigarets daily for the last ten years, symptoms of acute nicotine poisoning appeared in the form of a severe abdominal intoxication. Death ensued within eight hours. Necropsy revealed a cardiac infarct of the anterior wall with extensive lipoid sclerosis of coronary vessels and the aorta. Acute or chronic cardiac infarcts were observed in seven men. In one of them, aged 53, who had been in the habit of smoking forty-five cigarets daily, necropsy disclosed severe coronary sclerosis and an acute infarct of the anterior wall. Disturbances in the cardiac conduction were present in three men whose electrocardiograms disclosed prolongation of PQ and widening of QRS. In one, atrioventricular block developed suddenly as he was smoking a cigaret on an empty stomach. A man aged 43 who smoked about thirty cigarets daily had coronary insufficiency. In eight younger men (average age 28) with a daily consumption of from twenty to fifty cigarets, anginal symptoms were present. These patients frequently presented a bradycardia and steep and high T deflections and widening of the QRS complex in the cardiograms. Thrombo-angiitis obliterans was observed in four men. In two of these, nicotine was the only demonstrable external cause capable of impairing the peripheral circulation, and in the other two exposure to cold and dampness may have played a part. Some investigators believe that cigaret smoking is not necessarily the only cause of thrombo-angiitis obliterans but that it may contribute to its development because of the constricting influence of nicotine. The final solution of this problem is still impossible. Statistical studies indicate that patients with thrombo-angiitis obliterans are nearly always heavy smokers. Measures for the restriction or prevention of smoking, particularly among young persons, are discussed.

Vitamin C in Acute Infectious Diseases.—Szirmai investigated the therapeutic value of vitamin C in toxic diphtheria, in typhoid and in pneumonia over a period of three years. In toxic diphtheria with edema of the mucous membranes the death rate was greatly reduced when, in addition to the large doses of serum, ascorbic acid was given. As a rule, 300 mg. of ascorbic acid was administered intravenously, simultaneously with the serum, but in a separate syringe, so as not to impair the antitoxin. When intravenous injection was technically not possible, the acid was given intramuscularly. The parenteral administration of 300 mg. of ascorbic acid was repeated daily for from three to four days. In addition the patients were given from 50 to 100 mg. of ascorbic acid by mouth three times daily for about a week. In mild typhoid, the patients were given the juice of two or three lemons daily. Patients with typhoid of moderate severity were given, in addition, 100 mg. of ascorbic acid by mouth three times daily. Patients with typhoid in a severe form were given daily intravenous injections of 300 mg. for from four to five days. Under this management intestinal hemorrhages were almost completely prevented. In diphtheria and in typhoid, favorable results were obtained even when the doses were not sufficient to produce saturation. In pneumonia, however, the deficit of vitamin C had to be completely compensated before therapeutic results could be noted. Children with lobar pneumonia were given intravenous injections of 300 mg. of ascorbic acid once or twice daily. According to the literature from 2,000 to 3,000 mg. is necessary to produce saturation in pneumonia patients. The author emphasizes that the mode of action of ascorbic acid in acute infectious diseases has not been explained and that therefore the ascorbic acid itself rather than its neutralized solutions should be administered.

Geburtshilfe und Frauenheilkunde, Leipzig

2:57-112 (Feb.) 1940. **Partial Index**

Anesthesia and Narcosis in Gynecology. H. Franken.—p. 57.
Cesarotomy in Placenta Praevia. W. Bickenback.—p. 68.
*Concentrated Dextrose Therapy in Pregnancy Toxicosis, Especially in Eclamptic Conditions. H. Albers.—p. 78.
Serologic Reactions in Carcinoma. H. Dietel.—p. 99.

Dextrose Therapy in Puerperal Eclampsia.—Albers reports on the use of strong concentrations of dextrose in a large percentage of fifty-five cases of toxemia of pregnancy, observed in a total of 3,965 deliveries, with five deaths. Dextrose was employed in sixteen cases presenting acute prodromal antepartum symptoms of eclampsia, in eighteen cases of intrapartum eclampsia and in several cases of postpartum eclampsia.

The remainder were cases of toxemia without cerebral manifestations and were managed with rest and a carbohydrate and raw vegetable diet. Dextrose was given intravenously in quantities of 100 cc. in a 50 per cent solution, administered during three to five minutes. In one case six injections were made, three of 100 cc. within five hours. Dextrose therapy was successful in eleven of the sixteen cases with preeclamptic symptoms and made delivery by the normal route possible. The remaining five presented complications and required surgical intervention. A single injection of 100 cc. was frequently sufficient to abort the onset after a few minutes. Dextrose therapy in the eighteen cases of intrapartum eclampsia had only a limited effect. In only six was it capable of inducing the complete dilatation of the cervix and of permitting normal delivery. The other twelve had to be managed surgically. In six cases of eclampsia, occurring for the first time post partum, complete relief was effected by a single injection and in three others only one subsequent attack was observed. The author stresses the necessity of strict clinical control, as patients will not carry out instructions spontaneously. He believes that dextrose achieves the same results as a lumbar puncture with less difficulty, at the same time correcting carbohydrate deficiency. To avoid recurrence of increased lumbar pressure and the danger of eclampsia, he employed forceps as the method of choice in completing the delivery. In cases in which erythrocytes and granule casts appeared in large quantities in the urinary sediment or in which an eclamptic onset recurred after the first injection, instrumental delivery was resorted to. Thrombosis of the injected vein is not to be feared even after several injections.

Klinische Wochenschrift, Berlin

19:145-168 (Feb. 17) 1940

Clinical Manifestations of Adrenal Insufficiency. S. Thaddea.—p. 145.
Anaerobic Photochemical Oxidation of Pyroracemic Acid by Serum. W. Seitz.—p. 152.
Vitamin C Content of Dry Milk. F. Jung.—p. 153.
*Elimination of Histidine in Urine. W. Neuweiler and W. Grimm.—p. 155.
Further Results with Filarial Complement Fixation Reaction. W. Mohr and H. Lippelt.—p. 157.
Pathogenesis of "Lacquer Scabies." H. Riedel.—p. 159.

Elimination of Histidine in Urine.—Neuweiler and Grimm direct attention to the Kapeller-Adler pregnancy test, based on the fact that the urine of pregnancy contains large quantities of histidine. Other investigators observed that histidine elimination takes place not only during pregnancy but also in hepatic and allergic disorders. The histidinuria of hepatic disease has been ascribed to an altered function of the hepatic histidinase, and it has been suggested that that of pregnancy might be traceable to an inhibition of the hepatic histidinase by gonadotropic substance. Histidine has been detected in the urine of healthy men and children. The authors studied the question of histidinuria in nonpregnant and in puerperal women and determined the changes that may be produced in the elimination of histidine by the administration of histidine monohydrochloride and of vitamin C. Tests were made on 455 urines. Among twenty-five women whose pregnancy had not advanced beyond the fourth month there were twenty-three exhibiting histidinuria, whereas the 247 women in the more advanced stages of pregnancy all had histidinuria. Thus 99.3 per cent of the pregnant women eliminated histidine. Histidinuria was observed in only 15 per cent of the nonpregnant women. During the first days of the puerperium, urinary elimination of histidine was constantly observed. Daily control examinations on eight puerperal women disclosed that histidine elimination ceased in all from the tenth day on. It was not possible to reduce histidine elimination by saturation with vitamin C. By the administration of histidine monohydrochloride it was occasionally possible to increase the histidinuria and to induce a positive histidine reaction in nonpregnant women. A correct bromination is of great importance for the demonstration of histidine. Urines which contain nitrite must be brominated until a lemon yellow color results; urines free from nitrites until potassium iodide-starch paper turns blue. The blueness which develops in the urine, in contradistinction to that developing with pure histidine solution, can be extracted by butyl alcohol; this intensifies the sensitivity of the reaction.

Wiener Archiv für innere Medizin, Vienna

33:277-348 (Jan. 20) 1940

Clinical Pictures of Hypophysis. W. Falta.—p. 277.
*Recurrent Peptic Ulcers of Jejunum and "Surgically Incurable" Ulcers. H. Finsterer.—p. 296.
Sickle Cell Anemia. K. Makrycostas.—p. 330.

Recurrent Peptic Ulcers of Jejunum.—According to Finsterer, recurrent jejunal peptic ulcers are wrongly regarded as surgically incurable. He reports successful results in nineteen out of twenty-three recurrent cases secured by means of radical resection. The patients were men between 26 and 56 who had undergone from two to seven abdominal operations previously. They were predominantly younger men (four under 30, five under 40), five of whom had gastric disorders from childhood. Seven of the eight patients between 50 and 56 had been under treatment from twenty-eight to thirty-nine years. Recurrence of ulceration was due to Y shaped anastomosis (twelve), to entero-anastomosis (five) and to insufficient resection (six). Eighteen of the cases showed complete absence of complaints after resection. One patient had been operated on seven times within four years and had been well after resection for the last four years. Several other patients had been restored to health for from ten to twelve years. The four deaths were due respectively to necrosis of the gastric wall, to cardiac lesions, to peritonitis and to a double gastrointestinal fistula. The author believes that failure to employ radical resection when it is indicated accounts in large part for the recurrence of these ulcers. Persistent symptoms after prolonged medical management constitute an indication for resection even in the absence of a gastrocolic fistula or hemorrhages. Finsterer advocates resection of two thirds of the stomach and more when dilatation is present. He rejects Y shaped anastomosis except when subtotal resection is carried out to the extent of leaving one fifth or one sixth of the normal stomach. He believes that radical resection is indicated in youthful subjects with a history of recurrences. On the basis of more than 3,000 cases of stomach resection Finsterer recommends local anesthesia and splanchnic anesthesia for protracted operations.

Vestnik Khirurgii, Leningrad

58:299-384 (Oct.) 1939. **Partial Index**

Intravenous Anesthetic "Pronarkon" (Isopropyl-B-Bromalyl-N-Methyl Barbiturate). V. P. Noshchinskiy.—p. 299.
Intravenous Alcohol for Control of Pain. B. L. Bronshtein.—p. 304.
*Blood Chloride Content in Preoperative and Postoperative Periods. L. S. Bekerman.—p. 309.
Effect of Local Infiltrating Anesthesia on Local Leukocytosis in Inflammatory States. V. Kofman and A. Chudnaya.—p. 316.
Symptoms and Treatment of Metastatic Brain Abscess. A. V. Bondarchuk.—p. 322.

Blood Chlorides and Surgery.—Bekerman studied the blood chloride levels of 115 surgical patients. The chloride content of patients in the preoperative period as expressed in milligrams per hundred cubic centimeters of sodium chloride varied within considerable limits from 425 to 590 mg., the figure in women being somewhat higher than in men. A fall in the blood chlorides was a constant sign in gastrointestinal obstruction. It is not, however, pathognomonic of obstruction since it may be present in diseases characterized by profuse vomiting or diarrhea, in pneumonia and in peritonitis. A fall in chlorides was constantly observed both in mechanical and in dynamic obstruction of any segment of the intestine. The degree of the fall depended on the duration of obstruction. A uniform fall of from 10 to 30 mg. was noted on the first postoperative day. This did not appear to depend on the anesthesia or on the character or duration of the operative intervention. A postoperative fall of more than 30 mg. the author considers indicative of a threatening complication, intestinal atony or pneumonia. A parallelism was observed between the extent of lowering of the blood chlorides and the gravity of symptoms of intoxication. A fall in the chloride level of 150 mg. as compared with the preoperative level, or a level below 300, signifies a grave state threatening the life of the patient. The author suggests repeated infusions of hypertonic solution of sodium chloride and blood transfusion in the preoperative period as a prophylaxis against postoperative complications in patients with a lowered preoperative blood chloride level.

Vrachebnoe Delo, Kharkov

21:531-610 (No. 9) 1939. **Partial Index**

Ethyl Chloride Anesthesia in Military Area. M. G. Khaskelevich.—p. 533.
Modern Therapy of Anemias. B. N. Dubinskaya.—p. 535.
Atypical Diseases of Hemopoietic Apparatus. G. A. Rakochi.—p. 545.
*Blood Bilirubin in Disease. A. I. Germanov and T. I. Krylova.—p. 551.
Treatment of Erythremia with Spleen Preparations. A. N. Sokolov. —p. 555.
Relationship of Alkali Reserve of Plasma and of Erythrocytes in Alkalization Therapy. V. A. Leybovich-Livshina.—p. 559.

Blood Bilirubin in Disease.—Germanov and Krylova investigated the blood bilirubin content and the qualitative van den Bergh reaction in 343 persons. Of these, ninety-eight were well and ninety-six had malaria, fifteen renal disease, seventeen mechanical jaundice, forty-one jaundice of parenchymatous origin, eight decompensated cardiovascular disease, eight hypertrophic cirrhosis of the liver, eight croupous pneumonia and fifty-two various diseases such as gastritis and bronchitis. Bilirubin determinations were made by the van den Bergh micromethod with the Autenrit colorimeter. The bilirubin content in healthy persons was found in amounts of from 0.25 to 0.45 mg. per hundred cubic centimeters. The indirect van den Bergh phase reaction was present. In malarial patients the bilirubin blood content was found to be increased to within 0.4 to 0.88 mg. per hundred cubic centimeters, occasionally up to 1 mg. In cases complicated with splenomegaly and jaundice the bilirubin content may rise above 1 mg. An indirect van den Bergh reaction is obtained. With treatment the bilirubin content rapidly returns to normal. In obstructive jaundice the bilirubin content rose as high as 20 mg. Both the direct rapid and the delayed bi-phasic van den Bergh reactions are present. In the parenchymatous jaundice the blood gives both the direct and the bi-phasic van den Bergh reaction, while the maximal bilirubin content amounted to 26.5 mg. per hundred cubic centimeters. The jaundice threshold is represented by 1.5 mg. content. In the early stages of cardiac decompensation the blood bilirubin content is not above normal; in grave decompensation it may rise above 1 mg. The van den Bergh reaction is indirect or delayed bi-phasic. In grave renal disease and in cases of chronic uremia the bilirubin blood content is markedly lowered. The authors conclude that the blood bilirubin content determination is valuable as an aid in the diagnosis, treatment and prognosis of a number of disease states such as malaria, jaundice, avitaminosis, renal disease and cardiovascular disease. The van den Bergh micromethod utilizing the Autenrit colorimeter yields accurate results.

Geneeskundig Tijdschr. v. Nederl.-Indië, Batavia

80:449-512 (Feb. 20) 1940. **Partial Index**

*Neurologic Complications in Epidemic Parotitis. I. Snapper.—p. 450.
Premature Detachment of Placenta. R. S. Prawirohardjo.—p. 457.
Sources of Error in Apparently Good Blood Pressure Manometers. A. Saleh.—p. 470.
Bilharzia Japonicum in Lake Lindoe Region of Central Celebes. C. Bonne and J. H. Sandground.—p. 477.

Neurologic Complications in Epidemic Parotitis.—The occurrence of orchitis in about one third of the adult male patients indicates that parotitis is a generalized process rather than a local inflammation of the parotid gland. According to Snapper the virus of mumps attacks the central nervous system even more frequently than it does the testes. He cites a case in which parotitis became complicated with meningitis, meningoradiculitis and herpes zoster. Symptoms are observed in many cases of mumps which must be ascribed to involvement of the central nervous system. Severe headache, agitation, hallucinations, delirium, rigidity of the neck, Kernig's sign and slow pulse are to be regarded as symptoms of mumps-encephalitis. The meningo-encephalitis of mumps has a favorable prognosis. It is nearly always accompanied by a lymphocytosis of the spinal fluid, which may lead to the mistaken diagnosis of tuberculous meningitis. The peripheral nervous system may be involved; thus facial paralysis and paralysis of the palate or of the eye muscles have been observed after mumps. Since the disease process spreads from the meninges to the anterior roots, the author prefers the term meningoradiculitis to neuritis. Tetraplegia, neuro-ophthalmologic complications and deafness have been observed. The central nervous system may become involved in apparently uncomplicated cases of parotitis without clinical symptoms of encephalitis and meningitis. A positive Nonne and Pandy test and a comparatively high lymphocyte count are detected in over 50 per cent of uncomplicated cases of mumps. Recent investigations have revealed that the virus is present in the spinal fluid of patients with mumps even in the absence of increased protein content and cell count. Rabbits given intraspinal injections of the cerebrospinal fluid of patients with mumps develop meningo-encephalitis. Herpes zoster is a comparatively rare complication of mumps. When present it is accompanied, as a rule, by objective symptoms of meningitis.

Acta Medica Scandinavica, Stockholm

103:1-199 (Feb. 13) 1940. **Partial Index**

Third Generation Syphilis. P. Maijala.—p. 1.
Anergic Tuberculosis or Schaumann's Disease? S. Berg.—p. 8.
*New Method of Conserving Blood for Transfusion. F. Corelli.—p. 24.
Microscopic Changes in Brain in Experimental Influenza. M. A. Sheftel. —p. 36.
Investigations of Pulmonary Function in Patients with Silicosis. E. Roelsen and N. Bay.—p. 55.
One Hundred and Two Cases of Lobar Pneumonia Treated with Sulfapyridine. G. Alsted, E. Lundsteen and E. Mogensen.—p. 83.
Allergy and Rheumatism: How Does Hyperergic Tissue Impairment Express Itself in Clinical Pictures of Chronic Rheumatic Infectious Arthritis? G. Edström.—p. 90.
Plasma Protein in Epilepsy. R. Eeg-Olofsson.—p. 111.

New Method of Conserving Blood.—In the course of research on the treatment of allergic diseases with desensitizing substances Corelli observed that blood collected with sodium thiosulfate remained fluid for a long time. This fact, coupled with the knowledge that thiosulfate is not toxic, suggested its use as a preservative. The thiosulfate anticoagulant, as prepared by the author for use in man, is innocuous. It has a desensitizing and antitoxic property particularly valuable in the prophylaxis of transfusion. From 5 to 6 cc. per hundred cubic centimeters of blood is sufficient if the blood is injected immediately, otherwise 7.5 cc. is added to 100 cc. This percentage is low when compared with other anticoagulant solutions. The red cells remain preserved for two or three weeks and longer; after that a moderate anisocytosis and microcytosis gradually set in. The platelets and the white cells, especially the neutrophils, decrease during the first five to ten days. Lymphocytes and monocytes are preserved for from twenty to thirty days. One thousand transfusions given in medical, surgical, obstetric and pediatric cases proved the tolerability of blood conserved with the author's method. In 92 per cent of the cases there was no reaction at all and in 8 per cent there was only a transient rise in temperature. Most of the transfusions were performed with blood one week old. The technic of collecting and transfusing the blood is simple. The author suggests that collection centers be created in large hospitals and clinics. The availability of conserved blood has its advantages, one of them being that it can be given by continuous drip. The author advises (1) the collection of the blood from a donor in a fasting state and its injection, when possible, to the recipient in the same state, (2) the use of compatible blood and, (3) when indicated, the injection of ephetonine, epinephrine or synephrin with caffeine when transfusion is begun.

Ugeskrift for Læger, Copenhagen

102:175-204 (Feb. 15) 1940

Significance of Transurethral Resection According to McCarthy in Cancer of Prostate. E. Thyssen.—p. 175.
Three Cases of Exophthalmic Goiter After Treatment of Obesity with Thyroidin. W. T. Andersen.—p. 178.
*Case of Gastrocutaneous Fistula Treated by Feeding Through Jejunal Sound. K. T. Kjølhede.—p. 181.

Jejunal Feeding in Gastrocutaneous Fistula.—Kjølhede considers feeding through a jejunal sound a valuable method in postoperative gastrocutaneous and duodenocutaneous fistulas. He states that while introduction of the sound is difficult there is no further discomfort or risk for the patient, and he would first attempt to treat with this method all cases of fistula of the alimentary tract proximal to the jejunum. In the case reported fifty-one days passed without any sign of spontaneous healing, but the fistula closed after nine days of jejunal feeding.

NATHAN B. VAN ETTEN, M.D.

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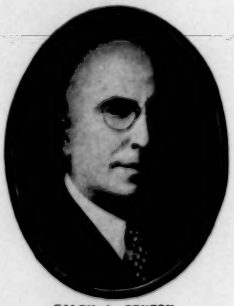

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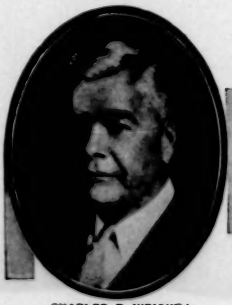

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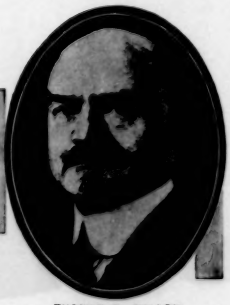

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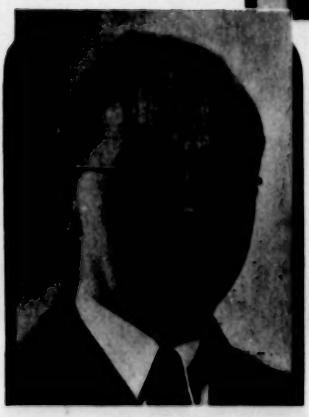

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